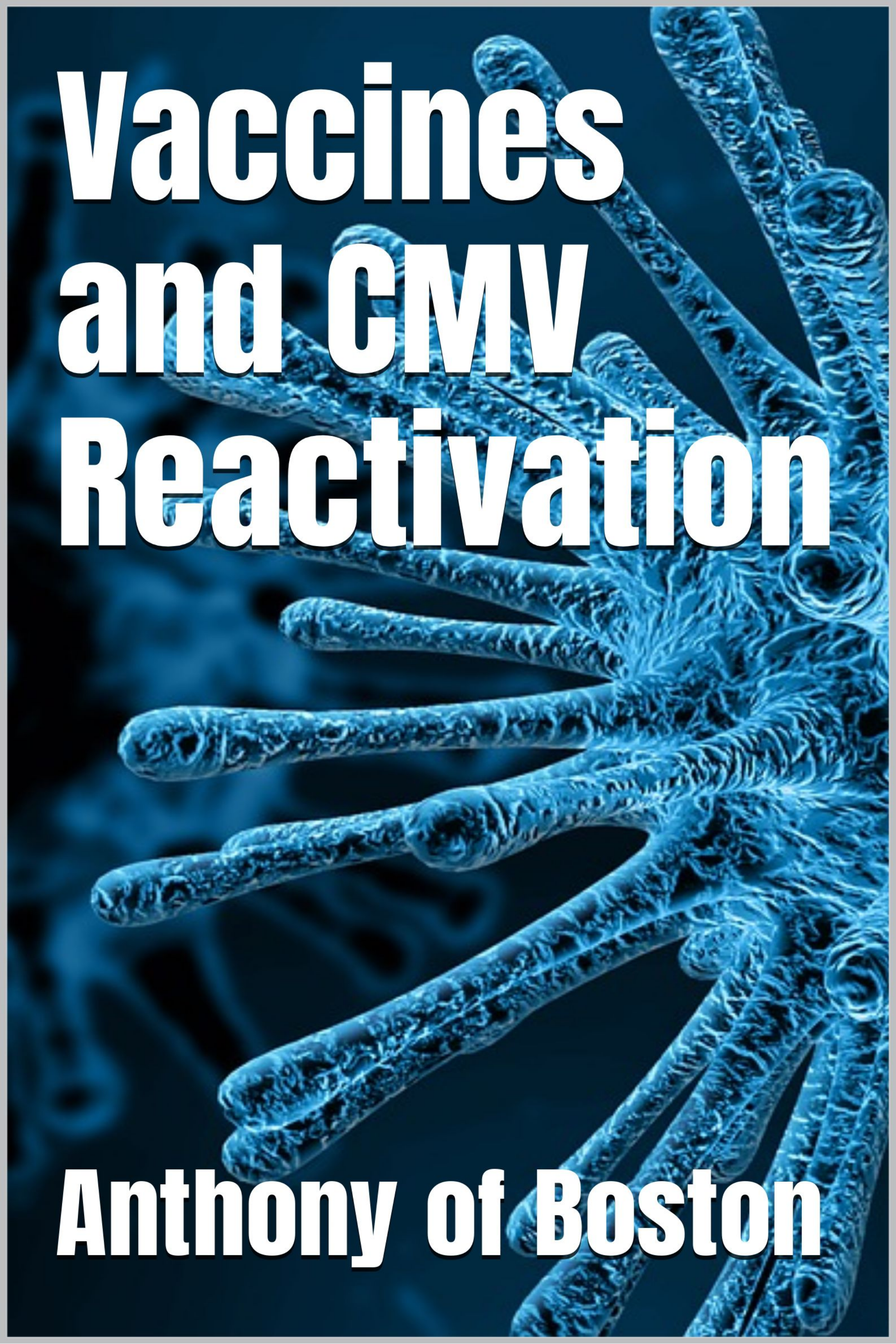

Vaccines and CMV Reactivation
Anthony of Boston

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Table of Contents

Chapter 1: Vaccines and CMV Reactivation

The pathogensis of COVID-19(coronavirus) leads to what is called acute respiratory distress syndrome(ARDS) and has impacted the entire world. The outbreak originated in Wuhan, China in December of 2019 and began to spread globally around mid-January of 2020. In March of that year, the World Health Organization officially recognized the coronavirus outbreak as a pandemic disease. The most common symptoms of COVID-19 infection are fever, fatigue, cough, and shortness of breath, with the most significant effects being inflammation and oxidative stress which lead to Acute Respiratory Distress Syndrome (ARDS) and organ damage. The most common symptom which leads to hospital admission is shortness of breath. Starting in late 2020 a number of vaccines have been rolled out to be administered to the general population. The Moderna vaccine developed in Cambridge Massachusetts has been confirmed in clinical trials to have a 94% efficacy. The AstraZeneca ChAdOx1 vaccine, developed by the University of Oxford in the UK, has an efficacy of 90%. The vaccine was also tested in Brazil, the US, India and South Africa. In 2020, German and US companies BioNtech and Pfizer began testing the BNT162 vaccine, which was found to have a 95% efficacy—a 94% efficacy in 65 and older. US company Johnson and Johnson developed a vaccine that has an 85% efficacy. Early indications showed that the vaccines reduced the chance of infection and spread of the COVID-19 Alpha variant. The efficacy of the vaccines, however, began to drop as the new Delta variant of COVID-19 began to spread worldwide. It originated in India in February of 2021 and was confirmed to be much more infectious and transmissible than the original Alpha variant. The efficacy of the vaccines are reduced against the Delta variant, according to vaccine researchers. The percent reduction varies. A US study found that the PfizerBioNtech vaccine efficacy against Delta is 88%, while an Israeli study finds that the same vaccine is only 64%. effective. This book is intended examine the adverse effects of the vaccine and how it relates to cytomegalovirus reactivation and also make a case for the isolated use of Vitamin E as a measure that could hypothetically alleviate symptomatic fatigue and shortness of breath in COVID-19 infections and thus possibly reduce hospital and ICU admission.

In June and July of 2021, a small number of breakthrough cases have been reported globally. Both partially and fully vaccinated have been testing positive for COVID-19 with mild symptoms. A few have been admitted to the hospital with more severe symptoms and some have

been admitted to ICU. This has corresponded with a larger surge of COVID-19 infections in unvaccinated, many of whom are hesitant to receive the Covid19 vaccine due to reports of adverse effects. Hospitals have reported that a greater percentage of those hospitalized and admitted to ICU with severe Covid infection are unvaccinated. It has also been reported that a greater number of unvaccinated young people are being hospitalized with severe cases as a result of the Delta variant.

Thousands of fatal adverse effects related to the vaccine ranging from deadly blood clots to heart inflammation and sudden cardiac death were reported to the VAERS Vaccine Adverse Effects Reporting System. Historically, it has been estimated that reports on the VAERS reporting system is roughly one percent of actual cases. In the past, pharmaceuticals and other vaccines have been suspended from just dozens of reports of adverse effects. The Swine Flu vaccine in 1976 was discontinued when 15 deaths were reported as being a result of the vaccine.

Another factor that led to vaccine hesitancy was based on how the CDC began to change its guidance on what the vaccines were able to achieve as far as fighting COVID-19. At first, it was stated that if a person was vaccinated against COVID-19, they no longer needed to quarantine and wear a mask. Presumably this meant that the vaccines limited the spread of the virus. However, confusion set in when the CDC later changed their advisory and warned that the vaccines did not prevent the spread of the virus, but only prevented serious illness and death. In October of 2022, Pfizer spokesperson admitted during a European Parliament hearing that the COVID-19 vaccine was never tested on its ability to stop the spread of the virus. Later, this book explains why the vaccine increases the risk of infection, but lowers the chances of severe illness and death, which theoretically allow the virus to live longer and mutate. The science behind the mRNA vaccine is enough to make this conclusion.

The obfuscation of information regarding the vaccine and its capabilities has fostered mistrust, as well as a large number of conspiracy theories, many of which involve ideas that COVID-19 was a hoax and that the vaccine was meant to kill off and reduce the population. Of course, there is the other extreme that believes that the vaccine does not cause adverse events and that the million adverse events reported on the VAERS is simply exaggerated and fictitious information put there by hostile actors. Right now, the

medical community is trying to navigate this revolting dynamic of extremes who are using the COVID-19 situation to justify their personal political outlook. It's maintained that anyone questioning the safety of the vaccine is a far right conspiracy theorist. While those advocating the vaccine are far left pundits bent on reducing the population. This book will do what should have been done from the start of the vaccine roll-out, and that is objectively examine information regarding why adverse effects are happening to a small portion of population, as oppose to dismissing or obfuscating that data for fear of giving rise to vaccine hesitancy. Hiding the data only prevents a win-win situation from coming about that would lead to a greater safety outcome.

The vaccine, as well as masking, has worked effectively for the majority of people when it comes to preventing severe illness and death from COVID-19. The vaccines do not stop the spread, but it has prevented a large portion of the population from dying of severe COVID-19. An unfortunate few, however, have experienced permanent neurological and cardiac side effects from the vaccine, and thousands have died from complications such as myocarditis and blood clots. Since the pandemic and the vaccine program started, there has been a significant rise in sudden cardiac death compared to previous years, even among young athletes. Cedars-Sinai researchers used data from the CDC and calculated that 143,787 heart attack deaths occurred the year before the pandemic. This number increased 14% the next year in 2021 to 164,096. The increase was most significant among those between the ages of 25 and 44. Researchers noted for 2021 that observed vs predicted rate of heart attack among young people between the ages of 25 and 44 increased 30%.

Just from the data which shows that heart attacks rose in 2020 even before the time of the vaccine roll-out, it becomes difficult to single out the vaccine as the sole effectuator of the spike in heart related deaths. In the regard, it becomes to justified to identify the antigen of the COVID-19 virus as the culprit—meaning that exposure to either COVID-19 via infection, viral vector vaccination, or mRNA vaccination can place a person at risk of adverse effect of sudden cardiac death or heart attack because in all three cases, the body becomes immunosuppressed amid exposure to the antigen, which in this case is the spike proteins.

Throughout this writing, one can connect COVID-19 and the COVID-19 vaccines to CMV reactivation. In those infected with severe COVID-19,

this CMV reactivation occurs as the disease progresses among those already immunocompromised or those who become immunocompromised via COVID-19 pathogenic effects. A study entitled "Cytomegalovirus blood reactivation in COVID-19 critically ill patients: risk factors and impact on mortality" found that 88 patients of 431 admitted to the ICU for severe COVID-19 between February of 2020 and July 2021 had signs of CMV reactivation. Higher mortality was also observed among those with CMV reactivation. On the other hand, when it comes to vaccination, those vaccinated against COVID-19 can experience CMV reactivation through immunosuppression via vaccine. In both cases, complications from CMV reactivation which can result in a number of adverse reactions like blood clots, myocarditis-induced sudden death, and Gullain-Barre syndrome are the result of the pathogenesis of CMV which I hypothesize is severe hyperhomocysteinemia which leads to an elevated mean platlet volume (MPV) which triggers thrombosis and thrombocytopenia, potentially leading to fatal complication from either blood clots, myocarditis, and Guillain Barre syndrome, especially among younger people since susceptibility to CMV reactivation is highest among those in the age range between 15 and 45. The symptoms of hyperhomocysteinemia mirror those symptoms experienced by those who have taken the COVID-19 vaccines. The symptoms of elevated homocyteine levels are pale skin, weakness, fatigue, tingling sensations that feel like pins and needles in the hands, arms, legs, or feet. Other symptoms are dizziness, mouth sores, and mood changes as well as neurological symptoms. All of these are symptoms reported by those who have recently been vaccinated. High levels of homocystiene can damage the lining of arteries and cause the blood to clot very easily, causing a stroke, heart attack, or pulmonary embolism, regardless of activities that promote blood circulation. Typically, if a person is sendentary for a long period of time, not moving for hours, his risk of a blood clot increases as a result of his inactivity. But extreme high homocystiene levels can raise the risk of blood clot, even if physically active. And this is due to how activated blood platlets are. Those who have a high intake of caffeine are at higher risk from adverse effects from CMV reactivation and subsequent hyper-homocysteinemia. In fact, anything that antagonizes Vitamin B12 would elevate risk for homocystenemia. These include potassium and Vitamin C. Thus we can infer that B12 and other B vitamins would play a role in the mitigation of adverse effects from the vaccine. Honing in on homocysteine as the culprit for adverse effects may be the only way to distinguish vaccinated individuals who don't suffer adverse effects, from those who do. In

this regard, it opens the door for the vaccine program to continue with a slight modulation that could further minimize the number of reported adverse effects, all the while still saving lives and preventing people from suffering from severe COVID-19 and death.

But meanwhile, the growing number of adverse effects reported were being dismissed as insignificant. It would not be until October of 2022 that the CDC would release data from their V-safe data program which was a smartphone app in which vaccinated individuals could report post-vaccination symptoms to the CDC. The CDC monitored the information but kept it under wraps until lawsuits from the Informed Consent Action Network (ICAN) led to a court order which required CDC to release the information. The data showed that roughly 8% of participants had an adverse reaction that required medical intervention. The latest data from the Vaccine Adverse Event Reporting System (VAERS) as of December of 2022 contains reports of 1,494,382 adverse events following COVID-19 vaccination between December 14, 2020, and December 30, 2022. Within that figure, there were 33,469 reported cases of death, 273,916 reported cases of serious injury. In the 33,469 reported deaths, 21,074 of those cases were attributed to the Pfizer vaccine, 9,330 to Moderna vaccine, and 2,896 to Johnson & Johnson vaccine. In the data of reported deaths, 9% occurred shortly after vaccination—that is within 24 hours of vaccination. 13% occurred within 48 hours of vaccination.

Relatively speaking, this is a small but extremely significant number of adverse affects that have been associated with the COVID-19(coronavirus) Vaccines, especially considering the fact that other treatments and vaccines have been discontinued after a number of reports which don't come anywhere close to the COVID-19 adverse effect report figures. In 2021, the Johnson and Johnson vaccine had been restricted by the Food and Drug Administration due to the large number of blood clots that have been reported. The formation of blood clots due to COVID-19 and the vaccines arises from an ailment called thrombosis with thrombocytopenia. Thrombocytopenia is a condition where platelet count is very low, and as a result, a person becomes at risk of excessive bleeding and hemorrhaging. Thrombosis, on the other hand, is a condition in which platelet count is very high, putting the body at risk of blood clots. The combined effect of thrombocytopenia and thrombosis has created a medical conundrum. How does one treat a COVID-19 patient with both a low platelet count combined with a high risk of blood clotting? In retrospect, it has been mostly blood clots that have affected patients

infected with COVID-19, as well as a small percentage of people who have taken the COVID-19 vaccine. The factor responsible for this outcome was an elevated mean platelet volume(MPV). When MPV is elevated, the risk of blood clots become higher even with low platelet count. Highly activated platelets, even if low in number, can still go into circulation and form clots. This pathology of COVID-19 is either related to the viral infection itself or a reactivation of the cytomegalovirus(CMV) which can occur in those who are immunocompromised or become immunocomprimised due to COVID-19 infection or COVID-19 Vaccine.

The mRNA COVID-19 Vaccines may be inducing a short-lived temporary immunosuppression allowing cytomegalovirus (CMV) to become reactivated in some people in very rare cases. This reactivation of the cytomegalovirus can in rare circumstances cause myocarditis and Guillain-Barré syndrome and a host of other ailments. The cytomegalovirus is highly ubiquitous in nature and common in people of all ages and is part of a family of herpesviruses that are the cause of chickenpox and mononucleosis in adolescents. After infection, CMV remains dormant in the body of most humans throughout their lives, but can become reactivated during immune suppression. A decreasing CMV susceptibility with men older than 45 may be the reason why rare cases of myocarditis is happening in younger people who have taken the mRNA vaccine. CMV susceptibility increases between the ages of 16-45, which may explain the high number of vaccine-induced adverse events in young people. Moreover, treatments, medications, and even vaccines can temporarily suppress the immune system and cause CMV reactivation. This is however very rare, but should be looked into as a possible cause of rare instances of myocarditis and Guillain-Barré in those who have taken the COVID-19 mRNA vaccine.

The ADTP vaccine, which is a vaccine that helps children younger than age 7 develop immunity to diphtheria, tetanus, and whooping cough (pertussis), induces temporary immunosuppression. According to a Russian study, this was correctable by using the immunomodulator purified staphylococcal anatoxin. Vaccinations normally create temporary immunosuppression. This is why receiving a second dose in much less than 6 weeks can sometimes prevent a complete response. This is the reason why the 2nd dose of the mRNA vaccine is given 3-6 weeks after the 1st dose.

These rare instances do not take away from the effectiveness of vaccines, but should still nonetheless be recognized. Overall, vaccines are highly effective in mitigating risk from infection when it comes to serious illness and death. However, there are rare cases of adverse effects and every effort should be taken to minimize even the slightest of chances.

The body has two major types of immunity—innate immunity and adaptive immunity. Temporarily suppressing innate immunity is imperative for the vaccine to do its job of allowing the body to develop adaptive immunity by forming antibodies that would protect it from future infections. If vaccines did not perform the task of suppressing the innate immune response, the body's initial immune response would kill the virus or foreign pathogen before the body has the chance to create antibodies specific for that virus. This initial immune response is called the interferon response. The Type 1 interferon response is a major anti-viral defense important for immune activation. It is one of the first innate immune barriers against viruses and provides early defense against viral activity. However, as mentioned before, the problem with this is that early clearance of viral activity can limit the dynamic of antigen availability and subsequent antibody response needed for the development of more circulating antibodies indicative of strong adaptive immunity. Basically, adequate exposure to the antigen allows the body to produce more antibodies, which would provide protection against later infections by the virus. This exposure becomes limited when the type 1 interferon response quickly acts against the virus and clears it out. The COVID-19 vaccines thus inhibit the type 1 interferon response so that overall active and adaptive immunity can be more efficient. Theoretically this would increase one's chances of infection, but lower one's chances of serious illness and death. However, in this trade-off of inhibiting the type 1 interferon response, the virus is allowed to live longer, spread amongst the population, and mutate. This ultimately places the unvaccinated at serious risk of deadly infection since the virus has become incrementally resistant to the higher antibody level of the vaccinated, making it all the more stronger against the lower antibody level of the unvaccinated—that is if the unvaccinated has not developed a robust innate immunity. This theoretically leaves the unvaccinated population with no other option but to get vaccinated. Unanimous consensus would thus become imperative. The entire population has to either agree to vaccinate or agree not to vaccinate. There could be no in-between. All it would take is a few vaccinated

people within a largely unvaccinated population to become infected and set off a much stronger strain of the virus on the unvaccinated. This is likely what happened in India and South America with the Delta and Lambda variants respectively. While vaccinations didn't begin in India until 3 months after the delta variant emerged, vaccine trials of Bharat Biotech's Covaxin(India's COVID-19 vaccine) started on July 15th 2020 in India. The danger of infected vaccinated on the unvaccinated also applies to households. A fully vaccinated asymptomatic carrier can place the unvaccinated family members of his/her household at serious risk of severe illness, especially if those unnvaccinated members are already immunocompromised. Conversely in a treatment that would theoretically opt for a greater type-1 interferon response at the expense of antibody development, the virus would not last long enough to grow stronger and mutate. In this scenario, adaptive immunity to the virus would be inhibited and while the chances of being infected would be lower due to higher type 1 interferon response, the odds of serious illness and death become higher in the event that the person does become infected. However, the spread of the virus in that scenario is lower. Type 1 interferons are likely the key in reducing the spread of coronavirus since the innate immune response is not specific to one variant the way the adaptive immune response is. If this is the case and if the goal is to stop the spread of COVID-19 variants, a COVID treatment would have to focus more on stimulating the type 1 interferon response. This type of treatment for COVID could be oral, as opposed to injection. It was stated by the CDC that the vaccinated can spread the virus as much as the unvaccinated.

Disease is caused by bacterium, viruses, parasites or fungus. These pathogens are made up of several components, which are unique to the specific pathogen and the disease it causes. The component of the pathogen that provokes the body into producing antibodies is called an antigen,and this process of which antibodies are produced in response to an antigen is a major aspect of immunity. Vaccines contain inactive parts of the antigen. When these inactive parts are introduced to the body through vaccine injection, the body responds by producing antibodies in response to it. This gives the body some protection against the disease should they be exposed to it later on. Technically, the part of the antigen presented to the body through the vaccine should not cause the disease itself. In the mRNA vaccines used for COVID-19, the part of the antigen used are the spike proteins located on the surface of the virus. However, these spike proteins are not injected into the body. Instead, the blueprint for making these

spike proteins are encoded into the mRNA contained in the vaccine. Once the vaccine is injected into the body, the mRNA enters the cell where its instructions are translated into spike proteins by the ribosomes. The vaccine also has a mechanism that inhibits the innate immune response or type-1 interferon response so that it does not act upon the mRNA before it penetrates the cell. Type 1 interferons tend to react to cell membrane disturbances. After the mRNA is translated into spike proteins in the cytoplasm, the adaptive immune response then recognizes the spike proteins as a foreign pathogen and creates antibodies that go to the infected cell, bind to the spike proteins and mark them for destruction. Once this pathogen is removed, the antibodies remain in the body for a period of time, through which it will recognize and locate any like forms of that specific pathogen it previously destroyed. When the body is later infected by the actual virus, the antibodies will recognize the spike proteins on the surface of the virus, bind to the virus and have it removed from the body. This protection is variant specific and lasts for as long as the antibodies remain in the body. The COVID-19 vaccine gives about 6 months of this protection. When the virus mutates into a different variant, it enters the body with a different form of spike proteins unrecognizable by those same antibodies. This allows the new variant virus to evade the antibody response since those antibodies were designed to remove a specific or previous form of spike proteins(a different variant). This is when another vaccine is required for developing antibodies against that specific pathogen or variant.

Essentially with mRNA, the body is instructed to create the part of the antigen of the virus. This is in contrast to regular vaccines, where the part of the antigen comes from outside the body and is contained in the vaccine before being injected into the body. The mRNA after it has been decoded is degraded and destroyed by the body's enzymes. When viruses themselves attack the body, the surface of the virus which contains spike proteins latches onto specific receptors of the host cell. In COVID-19, the spike proteins of the virus latches onto the host cell's ACE2 receptors before fusing with the cell membrane. This fusion allows the virus to release its genetic material into the cell. The RNA of that genetic material is then translated by the cell's cellular machinery into proteins that make up new virus particles. This is how the virus replicates.

Any long term or multi-variant solution to coronavirus will require blocking the virus's access to the cell's ACE2 receptor. This would require a vaccine that is directed against the virus's fusion proteins.

Another option is blocking the ACE2 receptors altogether, but this may come with collateral effects. Acting against virus fusion proteins would require identifying the mechanism triggered within the innate immune system upon detection of virus-cell fusion related membrane disturbances. A study found that cellular response to membrane fusion was limited to a type 1 interferon response, which is a major anti-viral defense important for immune activation. Type-1 interferon is essentially what provides early defense against viral activity. However, early clearance of viral activity could limit the dynamic of antigen availability and subsequent antibody response needed for the development of more circulating antibodies indicative of strong adaptive immunity. The COVID-19 vaccines limit the type 1 interferon response so that overall active immunity becomes more efficient. This helps make sense of why the vaccine is made not to prevent infection, but to prevent serious illness and death. Restricting the initial immune response or the type 1 interferon response also helps us make sense of breakthrough COVID-19 cases in fully vaccinated people.

Type 1 interferon is part of the innate immune response and also keeps the cytomegalovirus(CMV) at bay. CMV latency was found to enhace the protective effect of the innate immune response. When type-1 interferon is suppressed, CMV can become reactivated, leading to a number of illnesses like myocarditis and Guillain Barre syndrome. This is extremely rare in most cases.

What I have stated makes sense as to why the COVID infection rates are higher among the vaccinated three years since the start of the spread of COVID-19. Omicron subvariant XBB.1.5 was predicted by the NYC Department of Health and Mental Hygiene to be more infectious and transmissible among vaccinated individuals. In retrospect, we see that those who used hydroxy-chloroquine and Ivermectin to stop the early stages of COVID-19 infection would theoretically have lower protection from severe illness and death, but a greater likelihood of early viral clearance, allowing their bodies to react as soon as the virus makes contact with the cell membrane, minimizing the chance of the virus injecting its mRNA into the cell and thus causing severe illness. We can hypothesize that it may not have been the vaccination rate that reduced the spread of the virus, but the role of innate immune response or early viral clearance carried out by those who have a strong type 1 interferon response. Masking also played a huge role in containing the spread of the virus.

Successful administration of vaccines is not the only process in which immunosuppression is required for achieving the primary objective. In the case of vaccines, the primary objective is to stimulate adaptive immunity and antibody development for specific variants and reduce the probability of death in the likely event of infection from a deadly pathogen. Much like vaccination requires suppressing our innate immune response and keeping it from destroying the foreign pathogen before antigen presentation and antibody development can take place, organ transplantation also requires suppressing the innate immune response, and like vaccines, the organ transplantation process also comes with adverse effects like CMV reactivation. The innate immune system protects the body by recognizing when a foreign pathogen makes contact with the cell membrane, and then attacking it before it can inject its RNA into the cell, which would prevent infection. During an organ transplant, if the innate immune response is not suppressed, the body's immune system may detect the new organ as a foreign pathogen and trigger a transplant rejection. The same happens with a blood transfusion—if the innate immune system is not suppressed, the immune system can attack the red blood cells brought in via blood tranfusion because the immune system doesn't recognize those red blood cells as identical to its own. This dynamic is why immunosuppression is required for the successful implementation of vaccines, organ transplant, and blood transfusion. However, in all three, there comes a consequence of suppressing the innate immune response. And that consequence is CMV reactivation which can trigger complications like myocarditis-related sudden death and Guillain-barre syndrome. CMV typically remains latent in the host cell, but remains opportunistic about reactivating when the innate immune response is suppressed.

Having a robust immunity to COVID-19 is nothing to celebrate and this book will explain why. Health is largely comprised of two sides essentially opposing each other. Which is why I can surmise that the low COVID-19 rate in Africa is due to the continent's higher suspectibility to ebola, which is a different pathology from COVID-19, a pathology that would in theory oppose COVID-19 infection. We can also apply this vice versa, COVID-19 infection would in theory oppose ebola infection. Thus, nations that are more susceptible to coronaviruses and flu would be less susceptible to ebola and gastrointestinal viruses, and vice versa, nations less susceptible to coronaviruses would be more susceptible to ebola and gastro-intestinal viruses. This is why one may not be able to celebrate their ability to fight off one type of infection because it may be an

indication of a greater risk of another form of infection. Those in the US who have a high innate immune response to COVID-19 may be more susceptible to ebola and gastrointestinal viruses, should ebola or gastrointestinal viruses spread to the United States.

Here is an example of how the pathology of gastrointestinal viruses and flu/coronaviruses are antithetical to each other. Norovirus, a gastrointestinal virus, may even be an ally of the immune system against respiratory disease. Researchers have not been unable to understand how norovirus can evade immune response by hiding in gut cells. In a test using mice, researchers noticed that in the 1st few days after infection, T cells react strongly and could control the virus, but after 3 days, the T-cells could no longer detect the norovirus. While norovirus remained undetected, T-cell function remained active. I hypothesize that the norovirus regulates the immune system before taking refuge in the gut cells. Noroviruses use two proteins(p48 and p22) to block the host secretory pathway and impede immune responses. The host secretory pathways mediate the intracellular trafficking of proteins, lipids and molecules such as immune mediators like cytokines and chemokines. When viruses are able to subvert the trafficking of the secretory pathway, they are able to enhance their pathogensis. The norovirus virulence factor 1 (VF1) protein antagonizes cytokine induction. This may also serve as a signal for immune cells not to attack the virus. The norovirus minor structural protein VP2 suppresses antigen presentation.

Antigen presentation is a key component of adaptive immunity. The norovirus virulence factor 1 (VF1) protein which antagonizes cytokine induction may serve a hypothesis that the norovirus could reduce both cytokine storm and the pathogenisis of COVID-19. This is an extreme postulate. While many of the immunosuppresant medications like Janus kinase inhibitors used to reduce cytokine storm have side effects of the same symptomatic manifestations typical of norovirus, which are nausea, vomiting, and diarrhea, immunosupressant medications can lower the body's ability to fight other infections and could raise risk of being in infected with COVID-19. Norovirus, on the other hand, has only been shown to evade immune response, but not necessarily inhibit it the way immunosuppressants would. In fact, the immune system remains fully functional while the virus hides undetected in gut cells.

The norovirus virulence factor 1 (VF1) is the component of norovirus that antagonizes cytokine induction. It is possible that isolating this

protein could lead to advanced research regarding ways to fully inhibit the pathogenesis of COVID19 as it relates to cytokine storm. This would keep the immune response neutralized instead of suppressed.

Two major biomarkers in COVID-19 mortality are low platelet count and high mean platelet volume(MPV). Platelet count determines the number of platelet in your blood and are produced in the bonemarrow and released into the bloodstream. These cells circulate within the bloodstream and come together when they spot damaged blood vessels. This act of coming together by the platelets is called clotting. When platelet count is low, less of these cells are available in the bloodstream for clotting. When this happens, a person ability to form clots is reduced which would thus increases the person's chances of internal bleeding and hemorrhaging. When platelet count is high, the more of these cells are present in the blood stream for clotting. The higher this number, the more at risk a person is for developing blood clots.

The mean platelet volume is the size and reactivity of those platelets. A higher mean platelet volume indicates that one's platelets are larger than average. They are also younger as they have been recently released from the bone marrow. Because of this, it has been found that larger platelets undergo faster activation and are very hyperactive. This raises the risk of blood clots irrespective of the number of platelets. On the other hand, a lower mean platelet volume indicates that the size of the platelet are smaller than average. A lower mean platelet volume also indicates that the platelets are older and less active. This places a person more at risk for a bleeding disorder irrespective of platelet count.

The pathology of COVID-19 often causes the infected to present a low platelet count with a high platelet volume. Both of these factors have been associated with an increased mortality. Since blood clots are more prevalent in those with severe COVID-19, one can more easily infer that high mean platelet volume is the key biomarker, and that low platelet count may simply be the body's attempt at maintaining homeostasis.

Chapter 2: Virus War Hypothesis

As far fetched as this seems. The norovirus which is a virus that causes vomiting and diarrhea, could be a therapeutic agent against COVID-19. What is interesting about the norovirus is that its pathology may present an opposite case to COVID-19 when it comes to platelets. A study on rotavirus gastroenteritis which is a stomach virus much like norovirus, but found mostly in young children, found that the mean platelet volume was much lower in children suffering from the rotavirus gastroenteritis compared to those who were not. They also found that platelet count was higher in those infected with the rotavirus. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4359417/

This is exactly the opposite of what is happening in COVID-19. The connection between rotavirus and norovirus is that they are both transmitted via fecal-oral contact, so its likely that they share a similar pathology. Another interesting note is that the low mean platelet volume found in rotavirus gastroenteritis was associated with inflammatory gastrointestinal diseases, while the high mean platelet volume in COVID-19 was associated with inflammation in the respiratory tract. It would be interesting to see if an increased gastrointestinal inflammation is associated with a decreased respiratory inflammation. If so, a simple virus war can be enacted. Norovirus or rotavirus could theoretically be converted into therapeutic agents in the fight against severe COVID-19.

A study entitled "RNA Sequencing of Murine Norovirus Infected Cells Reveals Transcriptional Alteration of Genes Important to Viral Recognition and Antigen Presentation" found Murine Norovirus to be a potent simulator of the innate immune response. It was found to induce the type 1 interferon response which is responsible for early viral clearance. However, early clearance of viral activity can limit the dynamic of antigen availability and subsequent antibody response needed for the development of more circulating antibodies indicative of strong adaptive immunity. This is essentially what is happening with norovirus infection and makes sense of why the translation of murine norovirus proteins are inhibited. The interferon response attacks the virus in its pre-fusion state, keeping it from releasing its RNA into the host cell for transcription. (I hypothesize that this prefusion viral clearance process manifests as gastrointestinal disturbance—nausea, vomiting, and diarrhea.) As a result, in the case of norovirus, the virus retreats into the gut cells and remains there. Since there was inhibited antigen presentation

and antibody production, the virus remained undetected by the immune system. This is problematic for vaccine research for norovirus since norovirus is a virus that triggers the body to inhibit the host cell's transcriptome. This means that successful treatment for norovirus would require a mechanism that would inhibit the type-1 interferon response, which brings us to the pathology of COVID-19.

The COVID-19 virus does the opposite of norovirus. It inhibits the interferon response and significantly triggers the cell's transcriptome, releasing its genetic material(RNA) into the host cell for transcription. (I hypothesize that this postfusion transcriptome manifests as respiratory disturbance—fatigue, cough, and fever.) Thus the body is able to produce a greater amount of neutralizing antibodies via antigen presentation by dendritic cells. At times with COVID-19, the host cell's cellular machinery can be over-triggered and cause an inflammatory response called cytokine storm, which can lead to organ damage. Once again, this is contrary to how the norovirus operates. Norovirus significantly downregulates cytokine receptors. This aspect of activated cell transcriptome in COVID-19 makes it much easier for researchers to develop a vaccine since COVID-19 does not inhibit antigen presentation and antibody production. Thus, the COVID-19 vaccine can simply expose the body to a dead part of the antigen, and trigger the body to produce antibodies in response. The body will thus be protected if exposed to the virus in the future. This is not the case with norovirus since the virus itself inhibits antigen presentation. A norovirus vaccine would have to trigger a mechanism in the body that would immediately inhbit the type I interferon response as soon as the norovirus is presented in the body. It would have nothing to do with antibodies. Since norovirus and coronavirus are hypothesized to be completely antithetical to each other, a component of each virus can be used as a vector in a vaccine for the other. A component of the norovirus can be used as a vector in a vaccine for coronavirus. And a component of coronavirus can be used as a vector in a vaccine for norovirus. A viral vector vaccine differs from an mRNA vaccine. In the mRNA vaccines, the part of the antigen is not in the vaccine, but is encoded into the mRNA contained in the vaccine. Once the vaccine is injected into the body, the mRNA enters the cell where its instructions are translated into those proteins which make up the part of the antigen. The immune response then recognizes the proteins as a foreign pathogen and creates antibodies that go to the infected cell, bind to the proteins and mark them for destruction. Once this pathogen is

removed, the antibodies remain in the body for a period of time, through which it will recognize and locate any like forms of that specific pathogen it previously destroyed. When the body is later infected by the actual virus, the antibodies will recognize the antigen, bind to the virus and have it removed from the body. This protection lasts for as long as the antibodies for that virus remain elevated in the body. Viral vector vaccines, on the other hand, are similar in that they use the body's own cells to produce the antigen. However instead of mRNA, they use a modified virus to deliver the genetic code of the antigen. The advantage here is that it triggers both the type 1 interferon response, as well as the antibody production response. This would provide protection from infection and also protection after infection.

Understanding the dynamic of opposing pathologies between viruses can help one understand that there is a larger conflict within the body that involve numerous processes operating in opposition to other processes. This philosophy on physical health will describe how the body is maintained by endless confrontations and conflict between vitamins and minerals. When one overpowers another for the same receptor site for too long, illness results. As long as the battle remains even, health will be the result. Is this the complete story of health? No. Another aspect of physical health is the presence of outside invaders(viruses) and this is when things become a bit more complex. When something foreign enters the body, and symptoms result, the solution may not always be as simple as balancing out a vitamin or mineral deficiency resulting from one vitamin or mineral overpowering another. To understand the gist of this health theory, imagine all the vitamins and minerals that allow the body to function. Now imagine that half of these vitamins or minerals and their resulting health functions belong to one side of health and the other half belong to another side of health with these 2 sides essentially opposing each other and in this opposition, certain symptoms of one sickness are made worse or better when a vitamin or mineral from one side enters the body and enhances the ability of that entire side of vitamins and minerals from which it came..... while, at the same time, weakening the ability of vitamin and mineral absorption from the other side of Vitamins and minerals. In essence, understanding that reducing one set of symptoms always makes another set of symptoms worse. A good analogy of the contenders for each side of health is WWII's Axis and Allied powers. While Germany, Japan, and Italy are different countries with different agendas, the success of one country in WWII equated to the success of the others

in that alliance and at the same time, equated to a weakening of the opposing alliance. The same goes with the Allied powers of US, Russia, and Britain. The success of one those countries in WWII benefited the entire alliance while weakening the other alliance.

The newly entered vitamin or mineral is always the strongest in terms of absorption by the body. Now while some outside invaders(viruses or germs) enable one set of vitamin and minerals to overpower another and are easily destroyed by simply taking in antagonist vitamins and minerals from the other side and just correcting the deficiency, other viruses possibly(maybe) come in the body and attack both sides of the vitamin and mineral conflict. A good analogy is Japan attacking China while the Chinese Nationalists and the Chinese Communists were fighting each other around the time of WW2. Now you have a situation where you have make a choice on which side to empower first to weaken the virus. Doing so would weaken or deplete another set of vitamins and minerals and further exacerbate a part of the negative symptoms resulting from the virus, but the act of enabling one side injures the virus and reduces one set of symptoms. Now that the virus is injured, it cannot be destroyed until the other set of vitamins and minerals, which are being suppressed due the presence of the antagonist vitamins and minerals fighting the virus, gets its turn to take a shot at the virus. Now, in their turn to fight the virus, their presence then suppresses the previous set of vitamin and mineral alliance that went at the virus first. This helps eliminate some symptoms arising from earlier suppression, but brings back symptoms that arise from suppressing the vitamins and minerals which first fought the virus but were reduced when that first set of vitamin and minerals were enabled for absorption by the body. Now the virus is further injured, but the body is still suffering symptoms from the deficiency. In theory, once the virus is eliminated by going back and forth between enabling each opposing alliance to fight the virus, the original conflict of both sides of vitamin and mineral alliances eventually returns and the need to simply correct the deficiency through vitamin or mineral intake results without the presence of the virus. It should also be noted that the power of viruses to enable an alliance of vitamin/minerals to overpower the other alliance of vitamin/minerals can help cure present ailments. If one has an ailment currently in the body, an incoming virus can bring the reinforcements needed by the oppressed alliance to overcome the vitamin/minerals imposition of the other alliance brought about by the current ailment. Even today's doctors are injecting sick patients with other sicknesses in order to

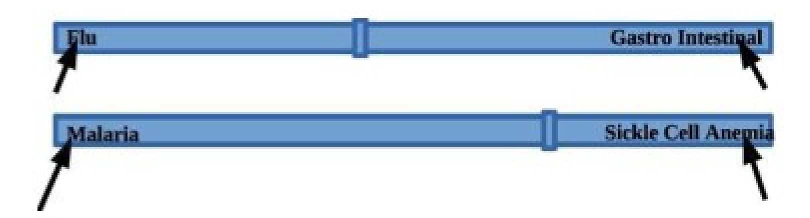
fight their current sickness. For example, the Measles virus is sometimes used to help people fight cancer. So in using our theory about vitamin and mineral alliances and its opposition being simultaneously attacked by an outside invader(virus), we will look at the ebola virus. Ebola is a virus that enters body through bodily fluids and is often found in Bats and Monkeys. Once a person is infected with the ebola virus, the virus itself attaches to and enters a cell and begins the process of replicating itself. In doing so it manages to destroy the part of the cell that would alert the white blood cells of the immune system, which would usually attack the virus and kill it. So In essence, the initial suppression of the white blood cells is what brings about first set of symptoms of a fever, sore throat, joint pain, muscle soreness, weakness, headache(according to Centers for Disease Control). According to the CDC, these are also the same symptoms of the flu/coronavirus. This makes it more important to see this as what the virus is doing and not so much the virus itself. In my observation, flu/coronavirus symptoms are just one side of the vitamin/mineral alliance asserting itself over the other alliance. But for the sake of simplicity, we will narrow the opposing alliances down to 2 major vitamins, Vitamin A from alliance 1, a supporter of flu/coronavirus-like symptoms and Vitamin E, an antagonist of flu/coronavirus like symptoms from alliance 2. As stated before, just like the alliances in WW2, the presence and assertion of one essentially strengthens the assertion of the entire alliance of which it's part of, while weakening the assertion of the opposing one and its alliance. So, with these first set of symptoms of ebola, we have an over-assertion of Vitamin A, which would support those initial flu/coronavirus-like symptoms and low white blood cell count, and at the same time support the suppression of the opposing Vitamin E and its alliance, which would automatically equate to an ability to antagonize flu/coronavirus like symptoms and low white blood cell count. In theory, the solution to dealing with the first part of ebola would just be simple treatment protocol for the flu/coronavirus. (I reckon Vitamin E to be the best fighter against flu/coronavirus symptoms). Here is where we have an issue. As far as I know, the first stage of ebola doesn't reduce white blood cell count, it just kills the signaler, and thus leaves white blood cells oblivious to what the virus is doing. An analogy would be breaking into a building but modifying the cameras in a way that the security guards do not see anyone breaking into the building. In that scenario, you have crooks going into the building and taking everything without the guards being aware of it. So this brings us to the second stage of ebola, which are the gastrointestinal problems along with the fever. Now at this point,

the white blood cells have been alerted and are now launching a full-scale reaction. According to the CDC, the fever usually persists during this stage along with the gastrointestinal problems of vomiting and diarrhea. The dilemma here is that because Vitamin A is a supporter of flu/coronavirus symptoms, Vitamin E, which would actually support gastrointestinal problems and high white blood cell count, should have led to the suppression of the flu/coronavirus-like symptoms in its fight against Vitamin A for the receptor site. Since I don't know the timetable of the symptoms of ebola, I have to hypothesize that fever would spike immediately before the onset of gastrointestinal problems and then slowly dwindle(even though still there) as the Vitamin E and its alliance along with its symptomatic characteristics(due to over-assertion) of nausea, vomiting, and diarrhea would forcefully assert itself and eventually overtake the flu/coronavirus-like issues and their support from Vitamin A. According to some research, this is the make or break point for ebola survival. It seems to warrant another hypothesis that those who survive ebola experience a balancing effect during that stage(which equates to health) and those who don't experience that balance, end up having to deal with a complete takeover by the Vitamin E/ gastro issue correlation. Since Vitamin E is also a blood thinner, this assessment would align with the final result of death for ebola sufferers from hemorrhaging, which is caused by thin blood. During stage 2, because Vitamin E raises blood pressure in its initial entrance, there should a rise in blood pressure during its assertion at some point in stage 2 of ebola. Because this assessment would conclude that ebola is simply an overreaction by white blood cells due to the white blood cells initially not being able spot the virus's presence, one can conclude the survival of ebola would be based on the body's ability to limit this overreaction. According to the American Family Physician-Baptist Regional Cancer Institute, a high white blood cell count is an emergency due to risk of hemorrhaging and brain infarction.

This would infer that white blood cell/Vitamin E/blood thinning/ gastrointestinal issues/hemorrhaging are all related. The overall assessment would infer that flu/coronavirus symptoms and gastro issues are inherently unrelated and are actually natural enemies. If the 2nd stage of ebola is a heightened manifestation of both flu/coronavirus symptoms and gastro symptoms without any transition of one set of symptoms overpowering and suppressing the other, then the ebola virus takes on a more complicated structure with the need to discover how blood thinning can occur without an

excessive presence of white blood cells and Vitamin E. If Vitamin E is being suppressed and bringing about flu/coronavirus symptoms simultaneously with Vitamin A being suppressed bringing about gastrointestinal, with the viral replication itself being the factor that's causing the symptoms and deficiencies of both opposing sides, then one has to decide which side of the vitamin/mineral alliance to empower first in order to began the process of weakening the virus by bringing the vitamin/mineral balance back to a normal level and knowing that empowering one alliance would weaken the virus but would exacerbate a part of the symptoms until the suppressed vitamin/mineral alliance gets its turn to magnify its presence in the body in order to fight the virus.

A good perspective toward health would not be in curing a disease, but making oneself sick in a way that should oppose a current sickness in one's body. Health should be looked at as a swinging pendulum or a meter that has two opposite ends, with each end being a different sickness, in which the more one is sick toward one end of the spectrum, the less one is sick from that other end of the spectrum. Here is imagery to perceive how flu/coronavirus symptoms and gastrointestinal sickness appears on a spectrum on the opposite ends, and also how Malaria and Sickle cell do the same. Imagine the bar on the spectrum being the vitamin influence to bring the bars to one end away from the other.



It's common knowledge in the medical community that sickle cell anemia, which is a disorder of the red blood cells in which hemoglobin, a component of red blood cells needed to bring oxygen to other organs of the body, actually provides certain protections against another disease called Malaria. Malaria usually comes from insect bites and results in flu/coronavirus like symptoms(fever, chills, muscle pain, headache). In other words, those with sickle cell anemia present in their body have very little chance of contracting Malaria. sickle cell anemia, of which hemoglobin is found to be atypical, thus deforming the red blood cells into a sickle shape, usually presents symptoms of anemia, weakness and fatigue, swelling in the hands and

feet, and jaundice(yellowing of the skin). The most notable study on why sickle cell anemia provides protection against Malaria was done by Michael P Soares, a researcher at the Instituto Gulbenkian de Ciencia (IGC), in Portugal. He and his team, of which included Ana Ferreira, a post-doctoral researcher, and Prof. Ingo Bechman, genetically engineered mice to produce one copy of sickle hemoglobin and after exposing the mice to Malaria, they found that the brain lesions usually associated with Malaria were absent. In this case, it was found that the atypical sickle hemoglobin repulsed the malaria parasite without interfering with the parasite's ability to infect.

The sickle cell/malaria dynamic aligns with the hypothesis regarding ebola and white blood cells/Vitamin E and its antagonism to flu/coronavirus-like symptoms(Vitamin A). According to medical research, sickle cell has been found to correlate with elevated white blood cell count. So, in applying our concepts from what was said about ebola in the previous pages, we can conclude that sickle cell's protection against malaria would be directly correlated with its natural high white blood cell count if our assessment for ebola at the stage 2 phase indicates a transition of Vitamin E/white blood cell/gastrointestinal's overtaking of Vitamin A/flu/coronavirus-like symptom's grip on the body. Current treatment to reduce sickle cell symptoms involve taking a prescription medicine called Hydroxyurea, which lowers white blood cell count. That in itself implicates white blood cell count as a major component of the problems arising from sickle cell anemia. Elevated white cell count is said to damage blood vessels by constantly tearing holes in blood vessel walls, which is exactly what happens in hemorrhagic fever from ebola.

We can build upon this by transferring these concepts to another disease that carries flu/coronavirus like symptoms, HIV(Human Immunodeficiency Virus). HIV is a sexually transmitted disease that acts on the body by destroying white blood cells in the body. In doing so, it makes a person less able to fight infections. At the advanced stages, people who succumb to the later stages of HIV, which is called Acquired Immunodeficiency Syndrome(AIDS), usually die from whatever infection is able to enter the body as a result of not having the white blood cells to fight it. With the assessment from this writing that ebola is an overreaction of the white blood cells, which are supported by Vitamin E and elevated in sickle cell anemia (with both Vitamin E and sickle cell being antagonistic to diseases that carry flu/coronavirus like symptoms of fever/muscle weakness), one can

assume, in continuing with this pattern, that HIV, which destroys white blood cells, would be significantly opposed by a body environment infected with sickle cell or stage 2 ebola when gastro/intestinal issues ensue. Interestingly, in an article at www.blackaids.org written by Mark Mascolini on behalf of the International Aids Society, it says: "Sickle cell disease lowers the odds of HIV infection about 70%, according to analysis of 423,431 records of adult African-Americans admitted to the hospital from 1997 through 2009. In contrast, sickle cell disease raised chances of infection with hepatitis B or C virus (HBV or HCV)."

So this confirms our assessment that anything related to a high white blood cell count, which is supported by Vitamin E, will antagonize anything associated with flu/coronavirus symptoms. The study regarding HIV and sickle cell showed that sickle cell actually raised the chances of infection with hepatitis B or C. From our assessment, it's easy to assume the reason for this is because Hepatitis B and C, unlike HIV, is associated with an elevated white blood cell count. In the later stages of Hepatitis C, an inflamed liver results in the depletion of stored Vitamin A(Vitamin E antagonizes Vitamin A) and a sharp rise in white blood cell count (Vitamin E supports high white blood cell count). If Hepatitis C is this gradual attack on the liver to that point, then Hepatitis C must be associated with a high white blood cell count, which affirms why sickle cell would raise the chance of infection for Hepatitis C. Hepatitis C, in that case, would be fundamentally different from HIV. Hepatitis B and C are basically the same, the difference is in how they are transmitted. Hep C is transmitted through blood, and Hep B is transmitted through fluids. Since hepatitis B and C is associated with an increasingly elevated white blood cell count, sickle cell anemia, which automatically indicates a high white blood cell count, would present an environment that supports hepatitis's increasing elevation of white blood cells and the resulting damage on the liver. At this point, we are gradually formulating the idea that white blood cell count elevation is not exactly the body's response to infection in general, but the conditions necessary for the presence of certain diseases in the body. Meaning, a higher white blood cell has to be looked at as fighting an infection while simultaneously creating a problem and that just as certain diseases are mitigated by using medicine to increase white blood cell count, other diseases are mitigated by using medicine to decrease white blood cell count. It would be no coincidence that the medications used to treat sickle sell and hepatitis have side effects that lower white blood cell count.

In using the information thus far, we can align white blood cell count, Vitamin E, type 1 interferons, and blood thinning. While antibodies are a type of white blood cells, their formation requires suppression of white blood cell count and the Type 1 interferon response, so thus we can put the formation of antibodies in opposition to white blood cell count. We can also place immunosuppressant medications on the side opposite of white blood cell count since immunosuppresants lower white blood cell count.

If we take this further to Cancer, we can show how this dynamic continues to correlate. We are provided with research that shows how high white blood cell count is associated with an increased mortality risk for cancer. Cigarette smoking in the medical scientific community is a widely-recognized cause of elevated white blood cell count. Cigarette smoking is also a widely recognized factor in causing lung cancer. From that alone, we can likely extrapolate that high white blood cell count is a risk factor for cancer. Since it was determined in this writing that Vitamin E is a natural a supporter of high white blood cell count, we can now see how scientific research regarding cancer lines up with that. The Sahlgrenska Academy at the University of Gotheburg performed a study on the antioxidant effect on lung cancer in mice. After the mice were given Vitamin E and a drug called Nacetylcysteine In, researchers found that the lung cancer tumors accelerated in response to Vitamin E and caused the mice to die much faster than the lung cancer mice who were not given the Vitamin E.

Martin Bergo, professor at the Sahlgrenska Cancer Center, University of Gothenburg. In another study done in Shanghai, non smoking women were evaluated for cancer risk and Vitamin E supplementation. It was found in that study that women who maintained a diet of Vitamin E supplementation had a significantly higher risk of developing lung cancer, specifically adenocarcinomas, which is a type of tumor that can develop anywhere on the body including the lungs.

Sickle cell becomes linked into this study of cancer because research has found in a California Study that those with sickle cell disease have a 72 percent higher risk of developing leukemia, which involves rapid overproduction of white blood cells.

Sickle cell anemia, which constitutes a higher white blood cell count, provides a compatible environment for cancer. Another study using hospital data in England discovered a threefold to 10-fold higher cancer incidence among sickle cell disease patients for hematologic cancers, and an increased risk for colon cancer, nonmelanoma skin cancer, kidney cancer, and thyroid cancer.

To continue discovering more links between conditions that result in high white blood cell count, lets look at what happens when cancer is faced with Vitamin E's antagonist, Vitamin A. In a study done by Ecole Polytechnique Federale de Lausanne, researchers found that colon cancer tumors are the result of a deactivated gene responsible for tumor suppression. This gene is called the HOXA5 gene. In that study, they found that the factor responsible for its re-activation was Vitamin A. "In mice that had colon cancer, the treatment with retinoids(Vitamin A) blocked tumor progression and normalized the tissue. By turning the gene for HOXAs back on, this treatment eliminated cancer stem cells and prevented metastasis in the live animals. The researchers got similar results with samples from actual patients."

In a study of the HOXA5 gene, which was activated by Vitamin A, on lung cancer, it was found that the proliferation of non small cell lung cancer cells are inhibited by expression the HOXA5 gene. Hypothetically, since Vitamin A activated the gene and blocked the progression of colon cancer, Vitamin A should also activate the same HOXA5 gene for lung cancer and subsequently block its progression. The Vitamin A activated HOXA5 gene is linked to inhibiting cancer cell proliferation in a number of cancers such as colon, lung, gastric, cervical, and breast. One interesting fact about Vitamin A and colon cancer is that many who have opted to treat their colon cancer with natural means via diet found significant success drinking carrot juice, which is loaded with beta carotene, a precursor to Vitamin A. Over at a website called www.chrisbeatscancer.com, two people, Ann Cameron and Ralph Cole wrote how they completely cured their cancer by simply drinking carrot juice without changing anything else in their diet. Ann Cameron has a book about her experience entitled "Curing Cancer with Carrots."

To understand why studies of Vitamin A supplementation on lung cancer has not lived up to this clear link between Vitamin A and cancer is maybe due to the fact that something else may need to be involved in the supplementation of Vitamin A. We find in Vitamin E

that most natural sources of it such as nuts and oils are very low in sugars. This could indicate the lack of necessity for the presence of sugar to ensure absorption. However, with beta carotene, most of the natural sources such as carrots, tomatoes, red peppers, cantaloupe, and sweet potatoes contain generous amounts of natural sugars. This must indicate a requirement for sugar to be present in order for Vitamin A to be absorbed. While Vitamin A is fat soluble(needing the presence of fat to be absorbed), its precursor, beta carotene, is not. If the study of Vitamin A reactivating the HOXA5 gene in cancer is directly linked to the experience of Ann Cameron's use of carrot juice to fully cure colon cancer, then the Vitamin A needed to activate the HOXA5 gene in humans must be related to ''Vitamin A with beta carotene as a precursor." If we hypothesize that Vitamin A's reactivation of the HOXA5 gene is contingent on the proper absorption of beta carotene as a precursor to Vitamin A, while needing the presence of sugar to effectuate a proper conversion, we can then relate that need for the presence of sugar as another aspect that plays a role in the white blood cell count dynamic. If cancerous tumor growth is linked to a high white blood cell count and Vitamin A is linked to activating a process that inhibits that tumor growth, with sugar as a prerequisite, then one can hypothesize that higher blood sugar is related to a lower white blood cell count while a lower blood sugar is related to a higher white blood cell count and subsequently a higher risk for cancerous tumors. Since sickle cell anemia is linked to a higher white blood cell count, and a higher white blood cell count is related to lower blood sugar, then sickle cell anemia, itself, should constitute a low risk for elevated blood sugar. In recent studies by Mary Elizabeth Lacy from Brown University School of Public Health, while using fasting glucose to measure diabetes risk, she and her colleagues had found that there is no indication of a higher or lower prevalence of diabetes in African Americans with sickle cell versus those without it. However, when using the hemoglobin test A1c, which measures the risk for diabetes by measuring the amount of glucose sticking to red blood cells, they found that the test resulted in a much lower prevalence of diabetes diagnoses for those who had sickle cell trait compared to those who didn't..... even though blood sugar levels were similar for both. Since red blood cells in sickle cell anemia don't live as long, the blood cells have less time to collect glucose, and this why the Alc readings would infer less incidences of diabetes in the sickle cell group.

However, there is no confirmation that the results of A1c for sickle cell trait is not related to biological factors. When it comes to type 1

and type 2 diabetes, it's been found that type 1 diabetes is associated with a lower white blood cell count (Hillson Rowan. Diabetes and the blood - white cells and platelets) and Type 2 is associated with a higher white blood cell count. The difference between the two is that in type 1 diabetes, there is no insulin produced. In type 2 diabetes, there is insulin, but not enough. Most studies have found that the risk of type 2 diabetes is higher in those with a higher white blood cell count. The problem here is that my hypothesis that a higher blood sugar would be related to a lower white blood cell count lines up with the study for type 1, but not for type 2. The only way to resolve this dilemma of confusion as to how diabetes(type 1 and 2) could infer two different white blood cell factors, is by aligning the result of the high WBC associated with type 2 NOT with blood sugar levels, but with insulin levels. Since the consumption of more sugar results in the production of more insulin in non diabetic individuals, the increased risk of type 2 has to be related to wearing out the body's insulin production with the consumption of excess sugar. This would infer that any non diabetic who tests for a high white blood cell count and is thus at a higher risk for developing type 2 diabetes, must also be assumed to be a high consumer of sugars. In that case, his insulin response should warrant that high white blood cell count. By making insulin the factor for white blood cell count, those who were tested for a lower white blood cell count that did not develop diabetes must be assumed to not have had the sugar intake and thus the insulin response that would have warranted a high white blood cell count. This would naturally indicates less risk for developing diabetes. This insulin application to WBC still lines up with the test regarding type 1 diabetes in which there is obviously no insulin response and thus low white blood cell count. The difference is that someone non diabetic with a low white blood cell count related to low insulin use has to do with necessity as a result of not needing to use much insulin for a lower sugar intake, as opposed to a type 1 diabetic whose low white blood cell count being indicative of no insulin having to do simply with just not being able to produce insulin, no matter how much sugar is consumed. This would also infer that sugar alone without being influenced by insulin would lower white blood cell count. In going back to how the activation of the HOXA5 gene, which inhibits cancer cell proliferation, is the result of Vitamin A(from beta carotene and needing the presence of sugar), we can infer that diabetes would lower the risk of some cancers. Researchers at the Norwegian University of Science and Technology and Trondheim University, found that after analyzing 1677 cases of lung cancer, the 1-, 2-, and 3-year survival in patients with lung cancer with and

without diabetes mellitus were 43% versus 28%, 19% versus 11%, and 3% versus 1%, respectively.

Since higher insulin is considered to raise the risk of colon cancer, the Vitamin A effect (that reactivates HOXA5 which subsequently inhibits the growth of tumor cells) must somehow revolve around slowing down the production of insulin. "In a study published by Morales-Oyarvide et al in the Journal of the National Cancer Institute, researchers found that patients with stage III colon cancer who had the highest "dietary insulin load" --the level of insulin produced by the body in response to diet--were TWICE as likely to have a recurrence or die of the colon cancer as patients with the lowest load. The trend held regardless of level of physical activity and was especially strong in patients who were obese, the researchers found.

So, essentially, with higher insulin being such a strong factor in mortality from colon cancer, any alleviating effect, such as the Vitamin A/HOXA5 activation process, has to relate to a reversal regarding this high insulin load. In order to make sense of Vitamin A via beta carotene reversing colon cancer, one has to conclude that the sugar/beta carotene/Vitamin A is needed to reduce insulin response in the body. Since insulin is usually released by the body in response to sugar, assessing the use of sugar to reduce insulin response is a contradiction. However, in a study entitled "Effects of Sugar, Salt and Distilled Water on White Blood Cells and Platelet Cells" which was performed in 2016, researchers found that white blood cell count is lowered for a few hours(2 - 6) right after eating sweets. So if we use that in conjunction with high insulin equating to high white blood cell count and thus poor prognosis for colon cancer, we can resolve the need for sugar and proper absorption of beta carotene (to turn into Vitamin A) as a total reversal of those causes for colon cancer to the fact that sugar temporarily lowers white blood cell count, and thus would temporarily lower insulin response and mortality for colon cancer. Diabetes, in this case, would reduce the risk of colon cancer only if insulin response is low. In some type 2 diabetes, while the insulin sensitivity is lowered(meaning cells are not absorbing sugar from the blood), the pancreas still produces a large amount of insulin into the blood stream. In that scenario, type 2 raises colon cancer risk. If insulin sensitivity is lowered along with a lack of production of insulin by the pancreas then type 2 diabetes, in that case, would lower risk for colon cancer.

To summarize, we can conjure up how the sides of health line up with regard to white blood cells. Below is a layout we can logically extrapolate from the writings thus far. We have 2 sides that are fundamentally opposed to each other to the point that any factor from one side can oppose any factor from the other side. For example, flu/coronavirus from side two of health would pose an oppositionary influence on Cancer from side one.

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria

We can extrapolate that since Vitamin E is on the side of higher white blood cells, Vitamin E can disrupt any sickness related to flu/coronavirus-like symptoms(usually an indicator of over-assertion of Vitamin A(beta carotene)), but enhance any sickness related to gastrointestinal/blood vessel/blood thinning issues. If a factor from one side is presented to the body when another factor from that same side is already present, symptoms would worsen.

With a list generated, we can surmise where CMV reactivation would line up. The number one cause of death for those suffering with severe COVID-19 is respiratory failure from Acute Respiratory Distress Syndrome(ARDS). Research has found that ARDS is closely linked to coagulation activation. While the increased thrombotic risk among COVID-19 patients has yet to be fully explained, I hypothesize the coagulation activation in COVID-19 pathogenesis is related to CMV reactivation. The result is an increased prevalence of thrombocytopenia or low platelet counts among those suffering with severe COVID 19. While low platelet count would indicate risk for bleeding, most COVID-19 deaths are linked to higher thromboembolism risk. Some studies have linked higher mean platelet volume(MPV) to COVID-19 severity. This has confused researchers for some time. Studies have concluded that both increased mean platelet volume (MPV) and decreased platelet count

should serve as biomarkers for COVID-19 disease severity. Platelet count is the number of platelets circulating our blood, while mean platelet volume (MPV) indicates the size of the platelets. MPV is also linked to the activity of the platelets. Higher MPV is associated with higher reactivity of the platelets--larger platelets are considered more reactive. While blood thinners like aspirin and warfarin can reduce platelet count, they do little to affect the size of the platelets. (Aspirin is still more effective at lowering MPV then Warfarin). In fact Warfarin, which has been used in treatment protocols for COVID-19 patients, has been found in study to both lower platelet count and increase MPV.

Researchers also found that the odds of the mean platelet volume being high in severe COVID-19 was almost 60%. With clot risk being higher than bleeding risk among severe COVID- 19 cases, we can presume that high mean platelet volume(MPV) should be singled out from low platelet count as the bio-marker for severe COVID-19 mortality risk from respiratory failure. Low platelet count on the other hand should serve as bio-marker for severe COVID-19 mortality risk from gastrointestinal(GI) bleeding. This leaves doctors having to navigate fine line between the two in severe cases. This would help us infer that treatment geared toward reducing the size and hyperactivity of the platelets should serve as means of alleviating the respiratory distress, but at the same time raise GI bleeding risk. During circulation, platelets are reactive to various stimuli. A high MPV with low platelet count indicates that the platelets, even though low in number, are going into circulation very quickly and raising the risk of blood clots. Vitamin E has been shown to reduce both platelet count and platelet reactivity.

Gastrointestinal bleeding occurs in about 2-3% of ARDS COVID- 19 cases. It is independently associated with greater mortality risk and prolonged hospital stay. However, few case studies have shown that the onset of gastrointestinal bleeding in ARDS patients was preceded by an improvement in respiratory symptoms. I hypothesize that greater risk of gastrointestinal bleeding is associated with lower risk of respiratory distress. Even though the ARDS patient would have suffered from gastrointestinal bleeding issues, one can still observe the fact that severe respiratory symptoms did improve just before the onset of the gastrointestinal bleeding. In severe COVID-19, there is fine line to walk between eliminating the risk associated with thrombosis and raising the risk associated with GI bleeding through application of blood thinning medications.

In a study entitled "Duodenal bleeding in a patient with COVID-19-Related Acute Respiratory Distress Syndrome", a 71 year old man admitted to the hospital with acute respiratory failure had significant improvement in respiratory symptoms right as he developed severe gastro-intestinal and haemorrhagic complications likely from the use of blood thinners and died from Peritonitis, which is a redness and swelling of the lining of the abdomen. This is a case that affirms my hypothesis where one ailment had provided relief from another. In his case gastrointestinal/blood thinning issues improved his respiratory symptoms, but later resulted in his mortality. In a another study entitled "An Unusual Case of Gastrointestinal Bleeding in a Patient With COVID-19" researchers credited the COVID-19 patient's high INR levels as having a protective effect on his respiration. He was suffering from warfarin toxicity, but this was credited to be a factor sparing him from the more negative respiratory manifestations of COVID-19.

There was also a case study in Wuhan of someone who was critically ill with COVID-19, but died from Gastrointesitinal bleeding. "We presented critically ill patient with COVID-19 who progressed rapidly with ARDS, and ultimately died due to massive GIB even after improvement of respiratory status." The name of the study was "A severe coronavirus disease 2019 patient with high-risk predisposing factors died from massive gastrointestinal bleeding: a case report" and is another affirmation of how ailments can oppose and fight other ailments.

It would be very interesting if more data can confirm an improvement of respiratory symptoms before onset of Gastrointestinal(GI) bleeding issues. In the most severe cases, doctors may be able to improve prognosis of severely ill ARDS COVID-19 patients by bringing INR levels beyond the therapeutic range. This would increase a severely ill ARDS COVID-19 patient's risk factors for GI bleeding, but at the same time raise the odds of alleviating their respiratory distress....if my hypothesis is correct. This fine line where GI bleeding issues would arise would have to be met with Vitamin K or some sort of pro-coagulant intervention in timely manner in order to circumvent death. INR measures the time it takes for the blood to clot--a higher INR means that the blood takes longer time to clot. Blood thinners tend to raise raise INR levels. It was found in number of studies that higher INR is associated with disease severity and non-survival in COVID-19. However, it is quite possible that ARDS disease

progression out pacing INR could be the reason for higher mortality outcomes. By raising the INR beyond the therapeutic range in severe COVID-19 cases, one may be able to reduce the platelet size or mean platelet volume(MPV) and thus improve respiratory symptoms. This may be the reason why blood thinners like Aspirin and Warfarin haven't been associated with decreasing MPV--the dosages may not have been high enough. Even though they inhibit platelet aggregation, they haven't been found to fully inhibit platelet activation at the dosage level used in tests.

The therapeutic INR range is 2.0-3.0. When myocardial infraction still occurs, the therapeutic range is increased to 2.5 -3.5 as secondary prevention protocol with Warfarin. Studies have shown that going beyond 4.0 shows no therapeutic benefit but increases the risk for bleeding. However, for the most severe cases of ARDS COVID-19, the range may have to be raised to 4.0 or higher in order to lower the mean platelet volume and improve respiratory symptoms. It's possible that raising the dosages and GI risk could effect platelet activation and platelet size. Gastrointestinal bleeding has been associated with lower mean platelet volume. Therefore increased risk of GI bleeding should also be associated with decreasing MPV and decreased reactivity of the platelets. Hence, when it comes to out list of allocating phsysical symptoms we can add high MPV and the cytomegalovirus to side 2 and place low MPV on side 1.

Side one of health	**Side two of health**
Type 1 interferon response	**Formation of antibodies**
High white blood cell	**Low White blood cell**
High blood insulin	**Low blood insulin**
Cancer	**flu/coronavirus symptoms**
Gastro-intestinal problems	**Vitamin A(beta carotene, sugar)**
Vitamin E	**Malaria**
Sickle Cell Anemia	**high mean platelet volume(MPV)**
Ebola-stage 2	**Cytomegalovirus**
low mean platelet volume(MPV)	

Ultimately it is clear that the pathology of high mean platelet volume (MPV) creates a major dillemma in treating blood clots in COVID-19 patients. Using anti-coagulant measures puts the patient at risk of haemorraging and gastrointestinal complication due to the fact that high MPV in COVID-19 pathogenesis comes with a low platelet volume or an already thin blood, but these platelets are highly reactive which raises the risk for clots as well. So attempting to correct the problem

of blood clotting by using blood thinners to reduce platelet activation only further exacerbates the already low platelet volume which only further elevates the risk of haemorrhaging. The other solution is identifying homocysteine as the culprit creating this conundrum. In doing this, the solution become finding a way to lower homocysteine levels. But the protective effect of blood thinner of respiratory function during severe COVID-19 should not be ignored.

Vitamin E's anti-viral and anti-coagulant properties could be used to raise INR levels in severe COVID -19 cases and could at the same time lower homocystiene levels and MPV levels in COVID-19 patients. But Vitamin E should not be applied with current anti-coagulation medication like warfarin, as this could provoke uncontrollable coagulopathy. Aspirin, however, may be an exception. There are studies that indicate that Vitamin when combined Aspirin improves the efficacy of Aspirin. Aspirin is also more effective than warfarin at reducing MPV. presume that ARDS disease progression would require higher dosage of Vitamin E--enough to raise the risk factors for gastrointestinal bleeding so that respiratory distress can be alleviated. Slightly raising the INR therapeutic range to 4.0 may suffice as safer early measure. The patient would later have to be treated with Vitamin antagonists in order to combat the risk of gastrointestinal bleeding. Vitamin K is usually the standard for pro-coagulation therapies and is also considered an antagonist against against the anti-coagulation activities of Vitamin E.

Vitamin E as a potential remedy for shortness of breath and fatigue issues in COVID-19 infection was tested in Iran in 2020. Researchers there found that Vitamin C and E provide only a slight and insignificant benefit in hospitalized non-severe Covid patients: “Hospitalized non-severe COVID-19 patients were randomly divided into two groups—intervention and control. The intervention group would receive oral Vitamin C 1000 mg daily plus oral Vitamin E 400 IU daily in addition to the national standard treatment regimen (hydroxychloroquine). The control group would receive the standard regimen of hydroxychloroquine alone. The testing was measured during the hospitalization period until hospital discharge or ICU admission. “The clinical response of patients at the end of treatment (either cure, improvement, or failure), the duration of hospitalization, and the mortality rate were recorded and compared between the groups.”

Results: “During the study, three patients in the intervention group (7.89%) and five patients in the control group (14.71%) had treatment failure, while all other patients had clinical improvement (P = 0.380). The duration of hospitalization was shorter in the intervention group (7.95 ± 3.18 days) compared to the control group (8.03 ± 2.83 days); however, the difference was not statistically significant (P = 0.821). Furthermore, no patients in both groups died during the study.” I want to hypothesize that the Vitamin C may have limited the blood oxygenating capacity of Vitamin E and thus reduced the effect. Since Vitamin C is a natural antagonist to B12, and B12 is what helps produce the red blood cells needed for oxygen transport, I presume that Vitamin C would be somewhat antagonistic to that oxygenating mechanism. I would request that a similar study be done again with Vitamin E alone while taking into account its effect on the blood oxygen level of those in each group. This request is made for the purposes of looking into methods for improving breathing without the use of medical oxygen equipment, thus freeing up space in hospitals for other emergencies. This is also an attempt to help establish a home-based protocol for those infected by COVID-19, but who are hesitant about vaccination. This study found that Vitamin E and lipoic acid, but not Vitamin C improve blood oxygenation

Ivermectin and Hydroxychloroqiue has been used with some success in improving symptoms, however, these drugs are not readily available despite their effectiveness. They are also discouraged by the mainstream media for political reasons, making it all the more difficult to advocate for their use. The effort to continuously find breakthroughs for dealing with shortness of breath and fatigue issues arising from COVID-19 would help reduce the likelihood of oxygen shortages in hospitals.

Around the time of the start of the pandemic, Vitamin E has been linked to EVALI, e-cigarette or vaping use associated lung injury a sickness caused by vaping. A number of people have been admitted to the hospitals with significant lung damage. Studies have linked the problem to Vitamin E Acetate. However, I want to point out that there are 2 main forms of Vitamin E. One is alpha-Tocopherol and the other is gamma-Tocopherol. Alpha tocopherol is associated with better lung function, while gamma-Tocopherol is associated with lower lung function.

A study published in the Journal of Allergy and Clinical Imunology led by Indiana University School of Medicine Professor of Pediatrics

Joan Cook-Mills, PhD, and Rajesh Kumar MD researched the effects of different forms of Vitamin E on lung development during early childhood. They found that certain forms of Vitamin E have different functions and effects.

“The group analyzed plasma samples from more than 600 pregnant mothers and their children to measure levels of two forms of Vitamin E, called alpha- and gamma-tocopherol, and lung function from early to mid-childhood.” Both forms of the vitamin are found in different foods, ranging from breast milk to cooking oils. They found opposing effects of alpha-tocopherol and gammatocopherol. Alpha-tocopherol was associated with better lung function, while gamma-tocopherol was associated with lower lung function.

Gamma-tocopherol is found in soybean, corn and canola oils. It is also found in vaping oils. The aforementioned study could point to Vitamin E as gamma-tocopherol as the main component causing lung damage in those sickened with EVALI. This vaping issue has possibly curtailed effective research into Vitamin E’s effect on Covid symptoms. The Vitamin E that I am positing to have a positive effect on breathing and fatigue issues arising from Covid is d-alpha tocopherol or dl-alpha tocopherol isolated in gel-cap form. The gel-capsule if chewed rather than swallowed could promote a more sure absorption of the Vitamin E.

In using the information already formulated, we can transition to heart attacks and their side of health. In 2005, a nationwide study found that heart attacks could be predicted by simply measuring white blood cell count. "As part of the federally supported Women's Health Initiative, investigators at medical centers all over the United States collected information on 72,242 postmenopausal women 50 to 79 years old. All were free of heart and blood vessel disease at the start of the study. During six years of follow-up, 1,626 heart disease deaths, heart attacks, and strokes occurred. Women with more than 6.7 billion white cells per liter of blood had more than double the risk of fatal heart disease than women with 4.7 billion cells per liter or lower. A count of 6.7 is considered to be in the upper range of normal, so what is "normal" may have to be redefined."

From our previous extrapolation, this study would indicate that heart attacks would be placed on side one of health as shown in the diagram, meaning that any other factors on side one would increase and promote the chances of a heart attack, while the factors on side 2

would decrease it. In comparison to heart attacks, which occurs when blood flow to the heart is restricted enough to damage a part of the heart muscle, Cardiogenic Shock takes place when the heart muscle doesn't beat strong enough to pump adequate blood and oxygen. Since both implicate the heart, it becomes easy to place cardiogenic shock and heart attack on the same side of health. Studies, however, have shown that opposing factors to heart attacks tend to promote possible incidents of cardiac arrest which is different from heart attacks in that cardiac arrest is an electrical problem in which the heart suddenly stops beating. The onset of type 1 diabetes, which presents a low white blood cell count, has also been linked to sudden cardiac arrest from shock, according to a 2015 study entitled "Risk factors for sudden death and cardiac arrest at the onset of fulminant type 1 diabetes mellitus."

Sepsis, which is an inappropriate immune response to an infection also linked to a low white blood cell count, raises the chances of cardiogenic shock. Because of the various nature of heart problems, I will have to align cardiac problems with blood pressure accordingly in order to make the distinction between high white blood cell count, cardiac related issues and low white blood cell count/cardiac related issues. This is done to make sense of sudden cardiac arrest taking place with hypertensive factors, and sudden cardiac arrest taking place with hypotensive factors. At the moment we can distinguish heart attacks from cardiogenic shock and cardiac arrest, and link high blood pressure/high white blood cell to heart attacks, and low blood pressure, low white blood cell to cardiogenic shock and cardiac arrest. This means that putting our body in a position to increase our chances of one should equate to decreasing our chances of the other. Statin drugs, which are used to lower cholesterol and are also found to lower blood pressure, has been said to reduce the effect of flu shots on the flu. The reason for this is that flu treatment has been found to raise blood pressure, which is opposite of what statins do. In theory, this would mean that raising blood pressure is a key component of fighting the flu/coronavirus, and not a side effect. This would align with our side one/ side two layout on the other page if we put high blood pressure on one side of health while keeping flu/coronavirus on the other. It would also align with the hypothesis that any factor on one side can counteract a factor on the other. According to that layout, since statins lowers blood pressure, it would automatically promote flu/coronavirus symptoms because flu/coronavirus symptoms and low blood pressure would be on the same side of health. A 2021 study entitled "Effect of statin use on the risk of

influenza and influenza vaccine effectiveness," researchers found that "There was a significantly higher risk of influenza among statin users, independent of vaccination. Statins may increase the risk of influenza through immunomodulatory mechanisms, or this may be confounded by other risk factors for influenza. It is important that people on statins should be vaccinated against influenza."Since it's been found in Volume 17 of the American Journal of Hypertension that white blood cell count is increased in hypertension, high blood pressure would have to go on the same side of health as high white blood cell count. Therefore, one can assess that the opposite would be the case in hypotension(lower blood pressure), which thus would put statins on the side of flu/coronavirus symptoms. Many have reported muscle pain and weakness in using statins, which are symptoms of the flu/coronavirus. Statins have been linked to higher blood sugars and heightened risk for diabetes, which are on the same health side of the flu/coronavirus. They have also been linked to depression, memory loss and suicide, which would likely put those qualities on the same side of flu/coronavirus. Here is an update to the layout of health:

Side one of health	Side two of health
Type 1 interferon response	Formation of antibodies
High white blood cell	Low White blood cell
High blood insulin	Low blood insulin
High blood pressure	Low blood pressure
Cancer	flu/coronavirus symptoms
Gastro-intestinal problems	Vitamin A(beta carotene, sugar)
Vitamin E	Malaria
Sickle Cell Anemia	Statins
Ebola-stage 2	high mean platelet volume(MPV)
low mean platelet volume(MPV)	Cytomegalovirus
Heart Attack	Cardiogenic shock and Cardiac Arrest
Happiness(high dopamine)	Depression(low dopamine)

To reiterate, the hypothesis is that every factor on one side can fight against any factor on the other. Depression fits on side two of health due to depression being reported with statin use. This lines up with how dopamine gets rid of depression and also how dopamine is used to reverse cardiogenic shock. Since Vitamin D is also associated with elevated mood, which corresponds with a higher level of dopamine, Vitamin D would also go on side one. Magnesium, since it's linked to

lower blood pressure, would go on side two. Calcium, which is held as an increased risk factor for heart attack would go on side one. So, if we update the side one and side two with what we just mentioned, we began to get a better understanding of the body.

Side one of health	Side two of health
Type 1 interferon response	formation of antibodies
High white blood cell	Low White blood cell
High blood insulin	Low blood insulin
High blood pressure	Low blood pressure
Cancer	flu/coronavirus symptoms
Gastro-intestinal problems	Vitamin A(beta carotene, sugar)
Vitamin E	Malaria
Sickle Cell Anemia	Statins
Ebola-stage 2	high mean platelet volume(MPV)
low mean platelet volume(MPV)	Cytomegalovirus
Heart Attack	Cardiogenic shock and Cardiac Arrest
Happiness(high dopamine)	
Vitamin D	Depression(low dopamine)
Calcium	Magnesium

Everything on side one is essentially linked together and everything on side 2 is essentially linked together. Since Vitamin C and sugar have a similar structure, and Vitamin C has been found to lower cholesterol, Vitamin C would go on side two of health.

This is justified because Vitamin C as a standalone nutrient may slightly advance the early stages of influenza and coronavirus infection. Vitamin C has a very similar molecular structure to glucose(sugar) and this leaves the possibility that both high Vitamin C levels and high glucose levels provide the ideal conditions for COVID-19 to attack the lung's immune defense system and gain access to alveolar cells before binding to the human ACE2 receptor. Research has shown that high glucose levels enable the virus to enter the pulmonary cells and replicate rapidly, inducing a pulmonary response. This response is caused by the immune system sending immune cells to the site in order to combat the threat. Cytokines are produced as part of the response. These cytokines are responsible for cell to cell communications and if too many are produced, the result is what's called cytokine storm. This can lead to pneumonia and organ failure. A study involving analysis of blood samples drawn

from 119 influenza patients at two hospitals in Wuhan, China found that those patients with higher glucose levels were more likely to undergo a cytokine storm. Their findings affirmed why patients with diabetes are more likely to experience cytokine storms and have worse outcomes with influenza and coronavirus infections.

A case study at the annual meeting of the Endocrine Society (ENDO), from March 17–20 presented an example of a false high blood glucose reading as a result of high Vitamin C intake. The Glucometer device used to measure blood glucose could not distinguish glucose from Vitamin C. This resulted in a false high blood glucose reading. However, a blood test showed that his glucose levels were significantly lower. I hypothesize that the same is happening with influenza and coronavirus. When entering the body, the virus does not see the difference between Vitamin C or glucose and benefits from the presence of either. Vitamin C and glucose have the same molecular structure and this is also apparent to the virus. Numerous studies have shown that Vitamin C does nothing to prevent or treat flu or colds. I hypothesize that Vitamin C as a standalone measure may exacerbate symptoms and can have an antagonizing effect on nutrients that could subvert the influenza or coronaviruses. This may be why that even though Vitamin C is common consensus as something that can fight flu symptoms, it still does not avert the number of cases every year.

Personally, I found Vitamin C to be most beneficial in alleviating liver/loss of appetite issues. I found Magnesium Oxide to be most beneficial for alleviating nausea/vomiting issues. I found Vitamin E(dl-Alpha tocopherol) to be most beneficial for alleviating early flu/cold symptoms like fatigue. I found glucose/Vitamin C to increase susceptibility to flu/cold symptoms. I found Vitamin E to increase susceptibility to nausea/ vomiting issues. I found Magnesium Oxide to increase susceptibility to loss of appetite issues. For Heart/ High Cholesterol/ High blood pressure issues, I found Magnesium Oxide and Vitamin C combined to be most beneficial.

Some nutrients may decrease oxidative stress in some organs, but may also increase it in other organs. Many people have reported success in using Vitamin C to treat flu symptoms. In many of these cases, Vitamin C was taken with other nutrient vitamins like Vitamin D and Zinc, both of which may have had a more significant role in reducing initial flu symptoms than Vitamin C. It is possible that Vitamin C could have inhibited the standalone effects of Zinc and

other vitamin/minerals used in various studies. I hypothesize that the key component in combating early flu or coronavirus manifestations is upregulating the expression of the Glut-1 transporter protein. This happens by lowering circulating blood glucose and Vitamin C levels in the body. Both Vitamin C and glucose enter the cells using the Glut-1 receptor and as long as both Vitamin C and glucose remain circulating in the bloodstream at high levels, Glut-1's expression will remain downregulated.

According to studies, high circulating blood glucose(hyperglycemia) and high circulating Vitamin C can downregulate the expression of Glut-1. Low circulating blood glucose(hypoglycemia) and low circulating Vitamin C can upregulate the expression of Glut-1. (Hydroxychloroquine may be the best at inducing the lower glucose environment needed for Glut-1 upregulation.) COVID 19 has been found to downregulate the expression of Glut 1.

Monocytes and macrophages are enriched immune cell types in the lungs of COVID-19 patients. When infected by influenza or coronavirus, these cells adapt their metabolism and become highly glycolytic. The cells began to convert glucose into energy at a high rate. This helps facilitate viral replication. Virus replication thus becomes dependent on circulating blood glucose and Vitamin C and the corresponding downregluation of Glut-1 expression. It is certainly observable that Vitamin C may help alleviate the after-effects of mechanisms involved in the immune response. It can certainly help the liver recover from extended influenza or coronavirus treatment. But ultimately because of Vitamin C's link to sugar via similarities in molecular structure, Vitamin C is justified being placed on side two of health.

This brings us to Vitamin K which used by hospitals to treat patients with bleeding issues. Since Vitamin K is an antagonist to Vitamin E due to the fact that Vitamin K is a blood clotter and vVtamin E is a blood thinner, Vitamin K would go on side two. Vitamin B12 has been linked to lung cancer and is a natural antagonist to Vitamin C. This would easily justify Vitamin B12 joining side one. Vitamin B12 is the primary nutrient for reversing high homocysteine levels.

Lowering homocysteine levels in COVID-19 patients may be the most efficient way to lower mean platelet volume (MPV) and reduce the risk of blood clots. Research has found both high platelet counts and high homocysteine levels to be markers for blood clot risk. While

blood thinners help lower the platelet count, they have only been found to have a minimal effect on platelet volume. Homocysteine levels may be the reason why.

Homocysteine is an amino acid used to make proteins. It is formed when methionine, another amino acid, is broken down in the body. Everyone has some homocysteine in their blood. However, when homocysteine levels become elevated, it can cause irritation of the blood vessels. Elevated levels of homocysteine show an increased risk for hardening of the arteries, heart attack, stroke, and venous thrombosis. The Pfizer vaccine, according to the CDC, increases the risk of ichemic stroke in people over 65. A Chinese study entitled "The association between homocysteine and ischemic stroke subtypes in Chinese" found that Chinese ischemic stroke patients had significantly higher homocysteine levels than the controls, suggesting that serum homocysteine levels may be a risk factor for ischemic stroke in Chinese. This helps corroborate the idea that CMV reactivation leads to hyperhomocysteinemia and high MPV levels which raise the risk of stroke, blood clots and other neurological symptoms. Lowering homocysteine levels requires regeneration of methionine from homocysteine, and this process is dependent on Vitamin B12(cobalamin). Vitamin B12 essentially breaks down homocysteine back into methionine and other amino acids needed by the body. Intravenous Vitamin B12 during the course COVID-19 treatment may reduce significantly the risk of blood clots and solve the conundrum of why patients with low platelet counts were still having blood clots. In addition to lowering homocysteine levels, Vitamin B12 has been shown in studies to also lower MPV levels. This could infer that homocysteine and MPV are intricately connected and correlated. Personally, I have found Vitamin B12, moreso than blood-thinners, helpful in allowing me to sit for longer periods of time without left leg swelling. Left leg swelling is an early symptom of deep vein thrombosis. This would translate to lowering blood clot risk for bed-ridden COVID-19 patients. Vitamin B12 also helps the body produce red blood cells, which are needed to carry oxygen through the body.

This brings into question the controversy of Vitamin C. Vitamin C and B12 have an antagonistic relationship. For this reason, I presume that Vitamin C as a standalone nutrient could raise homocysteine levels in body as a result of its antagonism to many of the processes of Vitamin B12. This effect of Vitamin C could be detrimental. I propose that Vitamin E and Vitamin B12 combined could aid the process

reoxygenation. Vitamin E and B12 could also play a role in offsetting adverse effects of the vaccine. It is presumed that the pathogenesis of Cytomagelovirus is extreme hyperhomocysteinemia, resulting in severe blood clotting complications and neurological problems.

Vitamin E can lower platelet count, while B12 can lower platelet volume. This study entitled "Elevated Total Homocysteine Predicts In-Hospital Pneumonia and Poor Functional Outcomes in Acute Ischemic Stroke" found "the risk of inhospital pneumonia was significantly higher in patients with the highest homocysteine level compared to those with the lowest homocystiene level."

Researchers should keep in mind that prolonged Vitamin E and Vitamin B12 use can raise cancer risk and accelerate tumor growth.

I presume that the only way to correct a high mean platelet volume and a low platelet count is by targeting and lowering homocysteine levels. Because high MPV is already placed on side two of health, we can also place high homocysteine levels on that side as well. Homocysteine is an amino acid used to make proteins and is formed when methionine, another amino acid, is broken down in the body. When homocysteine becomes elevated, it can cause irritation of the blood vessels and increase the risk for hardening of the arteries, heart attack, stroke, and venous thrombosis.

This study called "Homocysteinemia is inversely correlated with platelet count and directly correlated with sE- and sP-selectin levels in females homozygous for C677T methylenetetrahydrofolate reductase" found that Homocysteinemia which is highly elevated homocysteine levels, is inversely correlated to platelet count. This means that elevated homocysteine correlates to a lower platelet count. A study entitled "Elevated total homocysteine is associated with increased platelet activation at the site of microvascular injury: effects of folic acid administration" found that elevated homocysteine levels correlated with a higher mean platelet volume. These finding would infer that elevated homocysteine levels trigger both low platelet count and high platelet volume and would thus be the culprit for the condition known as thrombosis with thrombocytopenia. This 2015 study entitled "Vitamin B12 and/or Folate Deficiency is a Cause of Macro Thrombocytopenia" infers that it is likely that Vitamin B12 and / or folate deficiency is a prominent factor for "thrombocytopenia with larger than normal sized platelets." Researcher found that patients with B12 at lower than normal levels also had high MPV

levels with thrombocytopenia. The study also mentioned that B12 levels may not always indicate the state of deficiency and that plasma total homocysteines level and serum methylmalonic acid level would be a better parameter for identifying and assessing B12 deficiency. The study also noted that "There is a possibility that these patients may have acquired thrombocytopenia due to an immune or other consumptive pathology and as the bone marrow would have tried to regenerate more platelets to compensate, the Vitamin B12 stores have fallen. In these patients this has given rise to low normal levels of the vitamin. However, clinically there is no other feature in these patients to support this hypothesis." With this information, one can hypothesize that immunosuppression from vaccines, organ transplant, and blood transfusion leads the bone marrow stepping in to try and compensate by rapidly producing more platelets. Platelets are also critical responders to viral infection. Platelets interact with the viral pathogens which leads to activation of platelets. One can presume if mechanisms for early viral clearance are suppressed, the bone marrow could try and compensate by releasing new and highly active platelets to deal with the virus. Keep in mind that these new platelets are younger and more reactive and thus raise the risk of blood clots regardless of platelet count. This is what is happening to those having adverse reactions to the COVID-19 vaccine.

I presume based on my research that both high MPV and downregulated GLUT1 expression may advance the pathogenesis of COVID-19. Similar to those infected with COVID-19, a high MPV level and downregulated GLUT-1 were also found in those with Type 2 Diabetes Mellitus and hyperglycemia. This underscores research that links COVID-19 to higher blood glucose, higher MPV, and downregulation of GLUT1 transporter protein expression.

While altering these factors could subvert the pathogenesis of COVID 19, researchers must be aware that reversal of high MPV and downregulation of GLUT-1 could raise risk factors for cancer and tumor growth. Contrary to COVID-19, Cancers have been linked to lower MPV and upregulation of GLUT-1. This pendulum swing may indicate that as influenza and coronavirus illnesses rise, cancer rates may drop and vice versa. I would hope that researchers look into how raising risk in one area lowers risk in another and how that perspective should become a part of medical nomenclature. Understanding and controlling this pendulum swing may be key in advancing medical research

Now in going back to Side one and two of health, we can allocate elevated homocysteine to side 2 and lower homocysteine to side 1. Since Vitamin C enhances Iron absorption, Iron would go on side two. Since Iron disrupts Zinc absorption, Zinc would go on Side one. Here is another update of side one and side two on the next page.

A quick note about magnesium tablets. Chewing magnesium oxide tablet (250mg-500mg) seems to deter nausea symptoms related to an imminent bout of vomiting.

Side one of health	Side two of health
Type 1 interferon response	formation of antibodies
High white blood cell	Low White blood cell
High blood insulin	Low blood insulin
High blood pressure	Low blood pressure
Cancer	flu/coronavirus symptoms
Gastro-intestinal problems	Vitamin A(beta carotene, sugar)
Vitamin E	Malaria
Sickle Cell Anemia	Statins
Ebola-stage 2	Ebola-stage 1
low mean platelet volume(MPV)	high mean platelet volume(MPV)
Heart Attack	Cytomegalovirus
Happiness(high dopamine)	Cardiogenic shock and Cardiac Arrest
Vitamin D	Depression(low dopamine)
Calcium	Magnesium
VitaminB12	Vitamin C
Zinc	Vitamin K
Low Homocysteine	Iron
	High Homocysteine

More research into the links between vitamin/minerals and sickness would provide an even more comprehensive outlook regarding side one and side two of health. If we try to pin alcohol consumption and caffeine consumption on either side of the list, we run into problems. In many studies alcohol consumption has been linked with lower white blood cell count. On the other hand, caffeine has been linked with higher white blood cell count

The issue is that caffeine depletes calcium levels in the body, and calcium is a supporter of high white blood cell count, according to the

side one and side two of health. In tandem with the study that caffeine raises white blood cell count, caffeine becomes both an antagonist and supporter of factors on the same side of the list(in this case calcium and high white blood cell count respectively). In contrast and according to my logic based on side one/side two of health, caffeine would actually lower white blood cell count, while alcohol would raise white blood cell count. In order to make this true and line these up with side one and two of health appropriately, we have to associate factors that take place AFTER these drugs(alcohol and caffeine) have been used and released from the body……as the standard side effect of the actual drugs. Meaning, the symptoms that arise after alcohol or caffeine has left the blood stream or is leaving the blood stream, should be the deciding factor for the implications of its use. Since calcium is depleted as urine and feces eliminates caffeine from the body, calcium deficiency and it corresponding characteristics would be lined up with caffeine. Since calcium deficiency points to low mood, which points to low dopamine, caffeine would correlate to side two of health. In a study done about the effects of alcohol withdrawal on the brain, scientists found that after the drop in dopamine during a brief period of abstinence after alcohol consumption, a sharp rise in excessive dopamine ensues as the period of abstinence becomes longer. Even though this rise coincides with less receptivity to dopamine, it nonetheless results with more dopamine being in the blood stream. This state is called a hyperdopaminergic state. The name of the study is entitled “Hyperdopaminergic state in alcoholism.”

One can hypothesize that during this hyperdopaminergic state of hyperactivity, white blood cell count would rise considerably and so would blood pressure, along with all of its correlated factors. This outcome would have to be standard for defining alcohol's effect on the body in order to make it fit the appropriate side of health, which would be side one. In essence, and hypothetically, alcohol would be able to fight flu/coronavirus symptoms, while caffeine would fight gastro/nausea issues. In support of alcohol fighting flu/coronavirus symptoms, Dr. William Schaffner, chair of preventive medicine at Vanderbilt University Medical Center, told ABC News in 2018: "The alcohol dilates blood vessels a little bit, and that makes it easier for your mucus membranes to deal with the infection,"

However, to be better in line with side one and side two of health, I would have to conclude that alcohol's constriction of blood vessels would make more sense as a mitigator of cold symptoms.

Decongestants, which are a standard for fighting the cold or flu/coronavirus, raises blood pressure. So, therefore, alcohol would have to align with those factors in order to fully comply with side one and side two of health(high blood pressure being on the opposite side of the flu/coronavirus and therefore an antagonist to flu/coronavirus symptoms) and also prevailing medicinal determinants. In a French study, researchers published in the journal Neurology a paper which showed that heavy drinkers are at higher risk of hemorrhagic-type stroke, which is similar to what happens to people who have ebola. This further affirms alcohol being placed on side one of health.

This opens the door for caffeine to antagonize things like high blood pressure, high white blood cell count, and gastro/nausea problems. There have been studies that link to coffee to lower blood pressure. While it is well known that coffee would raise blood pressure during intake, determining factors after coffee is used and released by the body.....as the actual outcome of coffee.... allows us to makes sense of coffee's lowering of blood pressure due to a depletion of calcium. According to Webmd, "Calcium channel blockers are drugs used to lower blood pressure. They work by slowing the movement of calcium into the cells of the heart and blood vessel walls, which makes it easier for the heart to pump and widens blood vessels. As a result, the heart doesn't have to work as hard, and blood pressure lowers." This allows us to make perfect sense of how studies would find that coffee(caffeine antagonism to calcium) would reduce blood pressure. More studies support coffee lowering blood pressure. "Researchers at the Preventative and Clinical Investigations Center in Paris, France observed the blood pressure of almost 200,000 men and women between the ages of 16 and 95 for 10 years and recorded their blood pressure, pulse pressure, and heart rate. The findings revealed that those who avoided coffee and tea consumption all together had the highest rates of blood pressure, pulse pressure, and heart rate. And, those who drank tea the most often had the best health reports. Even coffee drinkers fared better than those who didn't drink coffee at all." We can update our side one and side two of health with alcohol and caffeine:

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Zinc
Low Homocysteine
alcohol
blood thinning

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Statins
Ebola-stage 1
high mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
caffeine
blood clot

Chemotherapy which is a treatment used to fight cancer, involves a number of side effects like flu/coronavirus symptoms, low white blood cells, low blood pressure. Upon observing side two of health, one can notice that many of those side effects that relate to chemotherapy are found in many of the components of side two. Vitamin observation also applies here. For instance, chemotherapy has been also known to raise the chances blood clot formation and when observing side two of health, we can see that Vitamin K, which activates our bodies' blood clotting mechanism, affirms that diagnostic. Because cancer would obviously be on the opposite side of chemotherapy, on side one, chemotherapy becomes a potential treatment to fight against all things related to side one of health....not just cancer, but heart disease, ebola, sickle cell anemia, high blood pressure, high cholesterol. Upon research, we find that chemotherapy drugs have been used with some success against the aforementioned. However, chemotherapy has been linked to high cholesterol, which wouldn't make sense on our heath layout if we put high cholestorol on side one. Further research shows that this cannot be resolved to

simply having high cholesterol on side one and low cholesterol on side two of health. This indicates a need to delineate. High cholesterol on the side one of health would have to be designated to High HDL Cholesterol, while Low Cholesterol on side two would have to be designated to Low HDL Cholesterol. HDL cholesterol is what's considered good cholesterol. Low LDL(bad cholesterol) would have to be placed on side one, with High LDL placed on side two. This would align with studies that places low LDL as a cancer risk, and higher LDL as a symptom of chemotherapy. Doing this essentially would link beta carotene, Vitamin A, C, and K to high LDL, high triglycerides. As confusing as that seems, it would actually explain why vegans are getting high LDL counts in blood tests. So this is what our updated layout of side one and side two of health would look like:

Side one of health	Side two of health
Type 1 interferon response	Formation of antibodies
High white blood cell	Low White blood cell
High blood insulin	Low blood insulin
High blood pressure	Low blood pressure
Cancer	flu/coronavirus symptoms
Gastro-intestinal problems	Vitamin A(beta carotene, sugar)
Vitamin E	Malaria
Sickle Cell Anemia	Statins
Ebola-stage 2	Ebola-stage 1
low mean platelet volume(MPV)	high mean platelet volume(MPV)
Heart Attack	Cytomegalovirus
Happiness(high dopamine)	Cardiogenic shock and Cardiac
Vitamin D	Arrest
Calcium	Depression(low dopamine)
VitaminB12	Magnesium
Zinc	Vitamin C
Low Homocysteine	Vitamin K
alcohol	Iron
blood thinning	High Homocysteine
High HDL cholesterol	caffeine
(good cholesterol)	blood clot
Low LDL cholesterol	Low HDL cholesterol
(bad cholesterol)	(good cholesterol)
	High LDL cholesterol
	(bad cholesterol)
	High Triglycerides

So now we can look for evidence that chemotherapy is an antagonist to side one of health and a promoter of factors on its own side, side two. Metabolic syndrome, which is a combination of biochemical abnormalities associated with cardiovascular problems, was found to be increased amongst survivors of cancer after chemotherapy treatment. The source for this study is entitled "Metabolic syndrome induced by anticancer treatment in childhood cancer survivors" and is from the journal of Endocrinology and Metabolism.

In order to avoid confusion, a clear distinction needs to be made between heart attack on side one and blood clot problems on side 2, which leads to heart attack. Heart attack on side one relates to cardiovascular disease and side two relates to circulation problems. Embolism would be a better way to describe a cardiac event on side two. I think heart problems and blood clots are used interchangeably since blood clots cut off oxygen to the heart, which causes heart attacks. Therefore, it can be confusing when reading medical terminology and deciphering what is meant by heart attack. Vegans are known to be at risk for blood clots, while simultaneously being protected from cardiovascular disease. That in itself infers that blood clotting mechanisms, such as the ones invoked by Vitamin K, actually fights off cardiovascular disease. So, metabolic syndrome arising from chemotherapy must relate to clotting factors. According to the layout, High LDL must also relate to clotting issues and not cardiovascular disease. More research is coming forth that LDL cholesterol is not actually linked to heart disease.

This possibly opens the door to also hypothesize that high LDL can fight cancer. In fact, in a 2012 study called "Low LDL cholesterol is related to cancer risk" by the American College of Cardiology, researchers found Lower LDL cholesterol to a risk factor for cancer.

This aligns perfectly with the layout of side one and side two of health as high LDL cholesterol is on the opposite side of cancer. We do, however, run into issues with the proper placement of statins. Since statins are known to lower LDL cholesterol, it cannot be placed on the same side as high LDL cholesterol. If we move statins to side one of health, it would make statins a supporter of cancer and high HDL cholesterol, but a fighter against the flu/coronavirus and malaria. Here would be the new layout with statins now on side one of health:

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Zinc
Low Homocysteine
Alcohol
Blood thinning
High HDL cholesterol
(good cholesterol)
Low LDL cholesterol
(bad cholesterol)
Statins

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Ebola-stage 1
high mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac
Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
Caffeine
blood clot
Low HDL cholesterol
(good cholesterol)
High LDL cholesterol
(bad cholesterol)
High Triglycerides

Statins as a fighter against depression still poses an issue as statins have been known to cause depression. Because statins, in this layout, would support heart attacks from heart disease, the prevention of heart attacks related to the use of statins must be associated with the formation of blood clots related to embolisms. Since statins have been found to lower blood clot risk in a Lancet Hematology study entitled “Statins and primary prevention of venous thromboembolism: a systematic review and meta-analysis”, we can imply the hypothesis that statins only relates to fighting against heart attacks arising from that, and not from heart disease.

The study that showed high LDL isn't linked to cardiovascular disease supports the idea that statins wouldn't prevent heart disease as shown on side one of health.

The formation of health aspects into two sides allows for health philosophy to make sense of complex factors regarding the different types of things we consume and the treatment protocols we follow.

Numerous studies were conducted to see if Hydroxychloroquine could be considered as an effective treatment for COVID-19. However, after a number of people have been reported to experience serious adverse side effects, the general consensus has--as a result--turned largely pessimistic about Hydroxychloroquine's effectiveness. The reason I considered the recommendation of a malaria drug as solid reasoning is based on my research in making sense of how overall health is divided mainly into two opposing sides. The lineup of symptoms, vitamins, and minerals on one side can each fight against the symptoms, vitamins and minerals of the other side. My reasoning infers that because Vitamin E is designated to side one of health, while flu is designated to side two, Vitamin E can easily be nominated as a candidate for treatment of anything flu-like(I infer COVID-19 as a flu-like illness). Because its hypothesized that anything on side one can fight against anything on side two, theoretically--as a result of that--any symptom, vitamin or mineral from side one is a contender to fight against any symptom, vitamin or mineral on side two. Judging from the way the components(symptom, vitamin or mineral) of each side is allocated with high insulin on side one versus both flu and malaria on side two. Hydroxychloroquine has a high insulin/hypoglycemic side effect and becomes a solid proposal in the fight against COVID-19. The fatal cases pertaining to Hydroxychloroquine use show that the adverse effects mirror strongly the adverse affects of extreme hypoglycemia and insulin overdose which both normally end in cardiac arrest. This is not the case for all reported treatments of COVID-19 with Hydroxychloroquine. Hydroxychloroquine has been found effective in some studies. Treatment with Hydroxychloroquine cut the death rate significantly in sick patients hospitalized with COVID-19 – and without heart-related side-effects, according to a new study published by Henry Ford Health System.

What Hydroxychloroquine does is draw from the high insulin component of side one and uses that to fight against the components of side two. Furthermore, it should not be surmised that this infers for a component of one side to be without problems should it be administered beyond what is necessary for treatment. This is happening with use of Hydroxychloroquine in some cases. A good analogy is drinking not just enough water just to satisfy one's thirst,

but drinking too much to not only satisfy one's thirst but also go overboard and at the same time bring oneself to water intoxication. In this, one can understand such a scenario doesn't discount water altogether as an effective treatment for thirst. The key for any further research on Hydroxychloroquine would be in understanding the individual patient's initial level of insulin and administering based on that in order to circumvent the dangers of the hypoglycemia/high insulin overdose symptom of Hydroxychloroquine's adverse effects.

Another example that affirms the side 1/side 2 layout of health are the promising results that Vitamin D has shown in coronavirus research. Studies performed by Michael F. Holick--a professor of physiology, medicine and molecular medicine and biophysics at Boston University School of Medicine--found that COVID-19 patients over 40 who had sufficient Vitamin D levels were 51% less likely to die from the virus. It was also concluded that anyone who had sufficient levels of Vitamin D in his system had a reduced risk of catching the virus by 54%. Vitamin D is lined up on the same side of health as high insulin, which was the effect of Hydroxychloroquine protocols used to fight COVID-19. This further affirms the outlook of 2 opposing sides of health.

The success of blood thinners in treating COVID 19 also affirms the side 1/side 2 layout of health. An observational study done by researchers at Mount Sinai in New York found that hospitalized COVID-19 patients who took blood thinner prescriptions had a 50% reduced risk of death. They also checked autopsy records from COVID-19 patients at Mount Sinai and found that 11 of 26 patients had blood clots in the lungs, brain and heart that weren’t detected in the hospital.

Scientists at Rensselaer Polytechnic Institute discovered the effectiveness of blood thinners in neutralizing the coronavirus. They found that the blood thinner heparin was effective in keeping the virus from infecting healthy cells.

The studies concerning blood thinners as an effective treatment justifies the Vitamin E proposal since it also has blood thinning properties. Blood thinning is lined up on the same side of health as Vitamin D and high insulin.

With Remdesivir, an antiviral drug manufactured by drug maker company Gilead Sciences, one can gather from information regarding the side effects of Remdesivir that Remdesivir is also drawing from the side 1 of health, specifically from the gastroproblems that has been set as antagonistic to flu-like illnesses. The most common side effect discovered in patients treated for COVID-19 using remdesivir was nausea. This makes Remdesivir a solid proposal against the coronavirus. In a 600-patient analysis, published by the Journal of the American Medical Association, the study in moderately ill COVID-19 patients showed that 11 days after starting treatment--65% of the 10-day Remdesivir patients, 70% of the 5-day patients and 60% of the standard care patients had left the hospital. "Side effects seen more frequently in the remdesivir groups included nausea, low blood potassium levels, and headache."

Gastro-intestinal problems are lined up on the same side of health as blood thining, Vitamin D, and high insulin. This thesis of overall health being divided mainly into two opposing sides makes sense of how Hydroxychloroquine(high insulin effect), Vitamin D, blood thinners, and Remdesivir(gastroproblem effect) are all effective against the coronavirus (COVID-19). This allows us to continue to build the list and allocate appropriately.

Side one of health	Side two of health
Type 1 interferon response	Formation of antibodies
High white blood cell	Low White blood cell
High blood insulin	Low blood insulin
High blood pressure	Low blood pressure
Cancer	flu/coronavirus symptoms
Gastro-intestinal problems	Vitamin A(beta carotene, sugar)
Vitamin E	Malaria
Sickle Cell Anemia	Ebola-stage 1
Ebola-stage 2	High mean platelet volume(MPV)
Low mean platelet volume(MPV)	Cytomegalovirus
Heart Attack	Cardiogenic shock and Cardiac
Happiness(high dopamine)	Arrest
Vitamin D	Depression(low dopamine)
Calcium	Magnesium
VitaminB12	Vitamin C
Zinc	Vitamin K
Low Homocysteine	Iron
Alcohol	High Homocysteine
Blood thinning	Caffeine
High HDL cholesterol	Blood clot
(good cholesterol)	Low HDL cholesterol
Low LDL cholesterol	(good cholesterol)
(bad cholesterol)	High LDL cholesterol
Statins	(bad cholesterol)
Sodium	High Triglycerides
Hydroxychloroquine	Chemotherapy
Remdesivir	Potassium
Elevated liver enzymes	COVID-19
Heparin	

We now see the aforementioned medical and health components that were factored into COVID-19 treatment possibilities during the year 2020 by various research institutions was added to the list--Hydroxychloroquine, Remdesivir, and Heparin.

Ivermectin was another drug that gained a great deal of attention for its ability to reduce viral load and help patients recover faster from COVID-19 infection. Three studies in different countries confirmed this result. Ivermectin is an anti-parasitic drug and studies conducted in Latin America which found that Ivermectin could inhibit replication of SARS-CoV-2 replication led to several Latin American

countries designating Ivermectin to be an official method of treatment for COVID-19. A study entitled "The effect of early treatment with Ivermectin on viral load, symptoms and humoral response in patients with non-severe COVID-19: A pilot, double-blind, placebo-controlled, randomized clinical trial" had tested patients in the early stages of COVID-19 infection. All reported symptoms of cough, fatigue, fever and headache. The group was divided into two: one group took Ivermectin within 72 hours of the initial onset of symptoms, while the other group would be designated as a control group taking no Ivermectin. At day 4 and 7, the group that took Ivermectin had lower viral loads. By day 21, the Ivermectin group had recovered from loss of smell faster than the control group. Overall, according to the study there was "a marked reduction of self-reported anosmia/hyposmia, a reduction of cough and a tendency to lower viral loads and lower IgG titers which warrants assessment in larger trials." Two other studies in Argentina and Bangladesh had similar findings. The study in Argentina entitled "Antiviral effect of high-dose ivermectin in adults with COVID-19: A proof-of-concept randomized trial" found that Ivermectin dosage correlated with higher viral decay rate. The Bangledesh study entitled "Ivermectin in combination with doxycycline for treating COVID-19 symptoms: a randomized trial" found the "Patients with mild-to-moderate COVID-19 infection treated with ivermectin plus doxycycline recovered earlier, were less likely to progress to more serious disease, and were more likely to be COVID-19 negative by RT-PCR on day 14." While Ivermectin was shown to have positive results in containing the early stages of COVID-19, other studies show that Ivermectin is not effective in treating COVID-19 in later stages. All the data points to Ivermectin being allocated to side one of health. The FDA stated that side effects associated with high dose Ivermectin use are nausea, vomiting, and diahrea, which are gastro-intestinal components which thus qualifies it as a fighter of flu/coronavirus symptoms.

Other components like elevated liver enzyme count, sodium, potassium, and COVID-19 were also added to the list and allocated appropriately: elevated liver enzyme count & sodium on side one and potassium & COVID-19 on side two. Making a decision on where to situate sodium and potassium was a complicated matter, but after making judgments based on factors mentioned in studies regarding flu medications and their effect on raising blood pressure along with factors described in the study of redesivir treatments that link remdesivir to side effects of low potassium, I resolved to place sodium on side one with remdesivir as an ally in the fight against the

components of side two. This automatically relegates potassium to side two. With potassium known to lower overall blood pressure and aid blood clotting mechanisms, it becomes justified to observe potassium as an ally of COVID-19 and a member of side two. The difficulty in making this decision came from observing studies by scientists at the National Cancer Institute's Center for Cancer Research that found that tumor cells rely on potassium in order to evade killer t cells. "In experiments with both mouse and human tumors, Restifo's team, including NCI surgical oncology research fellow Robert Eil (now at Oregon Health and Sciences University), found the fluid that fills the space between tumor cells can contain high levels of potassium, an ion that is usually concentrated inside cells." This extracellular fluid containing potassium was found to be immunosuppresive. This would imply that potassium is an ally of cancer and would thus contradict the thesis of potassium(side two) being on the opposing side of cancer(side one). However a study done by Jansson B. entitled "Potassium, sodium, and cancer: a review" affirmed that as potassium leaves the cells and sodium enters, the rate of cancer increases. The article states that "Patients with hyperkalemic diseases (Parkinson, Addison) have reduced cancer rates, and patients with hypokalemic diseases (alcoholism, obesity, stress) have increased cancer rates." This finding helps us infer that sodium is a carcinogenic agent and a contributor to cancer, and thus properly placed on side one on the lists presented. Please note hyperkalemic is abnormally elevated potassium while hypokalemic is abnormally reduced potassium. To resolve the contradiction between the studies, I could infer that potassium--as an antagonist to the carcinogenic agent sodium--is seen by the killer t-cells as an ally(or as doing the same job) which would thus avert or delay the killer t-cell response. As long as potassium is present, it will always attempt to antagonize sodium even as its pushed out by increasing sodium levels in the cells and this in itself is an anti-tumor operation by the potassium. Human tumor cells contain significantly more sodium that it does potassium. A study of human tumors from 10 cancer patients with the cancers classified in three types: keratinizing, transitional cell, and hypernephroid carcinoma ....and compared with patients that have no malignant cancerous processes revealed that in all three types of cancer cells, the average intranuclear sodium content increased more than three-fold, while the potassium content decreased 32, 16, and 13%, respectively. The name of the study is "Intracellular Na+:K+ ratios in human cancer cells as revealed by energy dispersive x-ray microanalysis."

Another component that can be added to the list appropriately is vitamin B1, also known as Thiamine. Thiamine is a natural micronutrient found in whole grains, meat, and fish. In my research and personal testing--having experienced symptoms of constipation and stringy stool--I found that much of my relief from those symptoms came immediately after consuming white rice(with coffee) or powdered dairy creamer(with coffee). Further research allowed me to deduce such an effect to a likely Thiamine antagonist since milled products like white rice and many powders have been implicated as causes of Thiamine deficiency. When coffee--a natural thiamine antagonist--is combined with a low thiamine source as a result of being processed through a milling system, the relief from constipation/stringy stool is heightened. While its understood that coffee on its own will outcome such an effect, I found that in combination with low thiamine processed products like white rice, the coffee diuretic effect is more pronounced. Because the aforementioned symptoms--constipation/stringy stool--mirror those of rectal cancers, I hypothesize that Thiamine antagonists can fight rectal cancer symptoms, while Thiamine itself would be a contributor to the disease and thus be assigned to side one of the list layout.

The milling process used on brown rice to remove the rice's husk, bran, and germ depletes 43-92% of their vitamin B1. However this lower amount of thiamine in white rice doesn't explain a depletion of thiamine upon consuming white rice. There has to be a mechanism in white rice responsible for the depletion of thiamine upon consumption. After further research and finding out that both brown rice and white rice contain arsenic, I've gathered that the thiamine content in the bran, husk, and germ in brown rice antagonizes arsenic, while the removal of those components(bran, husk, and germ) in order to processes white rice causes arsenic to override the thiamine content in white rice. Basically, even though the arsenic content in brown rice is higher than that contained in white rice, the bran/husk/germ of brown rice contains enough thiamine to keep the effect of arsenic suppressed. There is essentially a higher thiamine-to-arsenic ratio in brown rice than there is in white rice. White rice--in contrast--would have a lower thiamine-to-arsenic ratio, even though there is both less thiamine and arsenic in white rice. Therefore the arsenic in white rice is low enough to not cause toxicity but high enough (in terms of its ratio to thiamine)to effectuate a thiamine deficiency. Thiamine deficiency has also been linked to malaria, which is located on our side two of health. The Lancet, an open access journal, published an article in 1999 about a study performed in

Thailand that revealed that acute thiamine deficiency can mimic many complications of malaria.(VOLUME 353, ISSUE 9152, P546-549). This would link thiamine deficiency and arsenic to malaria and further justify thiamine to side one of health. Thiamine antagonists and even arsenic would then be relegated to side two of health. Now we can hypothesize that arsenic, since its on side two, can help fight cancer, which is on side one. In 2010, researchers at Stanford University found that treating mice that have a certain type of brain tumor with arsenic trioxide slowed or stopped tumor growth. Philip Beachy, PhD, professor of developmental biology and the Ernest and Amelia Gallo Professor in the School of Medicine, is the senior author of the new findings about arsenic, published online in the Proceedings of the National Academy of Sciences July 12. Here is what the side one and side two layout now looks like with Arsenic and Thiamine allocated appropriately:

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
Low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Zinc
Low Homocysteine
Alcohol
Blood thinning
High HDL cholesterol
(good cholesterol)
Low LDL cholesterol
(bad cholesterol)
Statins
Sodium
Hydroxychloroquine
Remdesivir
Ivermectin
Elevated liver enzymes
Heparin
Thiamine

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Ebola-stage 1
High mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
Caffeine
Blood clot
Low HDL cholesterol
(good cholesterol)
High LDL cholesterol
(bad cholesterol)
High Triglycerides
Chemotherapy
Potassium
COVID-19
Arsenic

Now we can further expound on this list and foray into a vast array of other components that are ever present in our life processes. By observing the layout and the components that comprise both sides, we can begin to more easily surmise where other forms, substances, particles, nutrients, vitamins, minerals, and symptoms would fit. For example, since Vitamin D and cancer is on side one, we can presume that sunlight itself would go on side one. In building upon that, we can also add radiation to side one. The side effect of nausea, bruising, and bleeding that goes with radiation exposures affirms its link to the blood thinning and gastro problem components on side one.

Confusion regarding this allocation may arise from the fact that radiation treatment has been used to treat certain cancers. Radiation works by damaging the DNA of the cancer cells—thus keeping them from replicating. This eventually causes both the cancer cells and the noncancer cells to die. This outcome doesn't necessitate that a reactivation of anti-tumor mechanisms within the body took place, which if should be the case(that no reactivation of anti-tumor mechanisms took place) then such would only increase the chances of a recurrence should some of the cancer cells survive the radiation therapy. With this outlook, radiation can be placed on side one as an ally of cancer.

Three biological agents that have been a concern are Anthrax, Ebola, and Small-pox. Earlier in the chapter, I made an analysis on which side of health ebola could be designated. After researching the stages of ebola-- with initial symptoms being flu/coronavirus-like and later symptoms being more gastro related—I came to a consensus that the later stage of ebola symptoms (which are gastro-related)should go on side one. Coincidentally, the heavy bleeding which occurs at the later stages of ebola is another reason it fits on side one; blood thinning is on side one. Also, the elevated white blood cell count or leukocytosis that damages blood vessels by constantly tearing holes in blood vessel walls further affirms the designation; high white blood cell count is on side one. All of these allow for ebola's later stages(or stage 2) to be a good fit for side one. This course of disease progression is very similar to the stages that occur with anthrax inhalation. Initial symptoms of anthrax inhalation are flu/coronavirus-like symptoms. Later symptoms are gastro/bleeding related. The big difference between ebola and inhalation anthrax is the white blood cell count. In ebola, it's common for patients to develop leukocytosis, an abnormally high white blood cell count. In anthrax inhalation, patients have been found to have a lower white blood cell count with the gastroenteritis that arises in the later stage. Studies have found that a toxin in anthrax is able to paralyze the white blood cells and thus keep them from fighting the infection. In terms of our list, this complicates the allocation process for anthrax. Its inhibition of blood clotting and manifestation of gastro symptoms align with components on side one. However, based on our thesis, those problems mentioned would bring with them some measure of increased white blood cell count(high white blood cell count is also on side one), but that is seemingly not the case with inhalation anthrax. However, in a 2001 CDC(Centers for Disease Control) interview with acting deputy director of CDC's National Center for

Infectious Diseases Dr Julie Gerberding, she states "We know from the cases that have been reviewed so far, that most of the patients with inhalation anthrax had high white blood cell counts, or indications of acute inflammation on their white cell count, and perhaps more importantly, none of the patients had a low white cell count, or an increase in the number of lymphocytes." If this is the case then Inhalation anthrax(stage 2) would go on side one with ebola stage 2. So therefore, in both cases of ebola and anthrax inhalation, we can say that the white blood cells are being temporarily paralyzed at the flu/coronavirus stage, which is thus causing a subsequent over-reactive avalanche of WBCs when that flu/coronavirus stage ends.....leading to the effects of symptoms like bleeding and gastroenteritis and eventual respiratory failure. It's important to note that hypotention has been documented in a number of inhalation anthrax cases. Hypotention is low blood pressure and is not on side one where inhalation anthrax(stage 2) would be. It's on side two. Our thesis would infer that hypertension(high blood pressure) would be linked to inhalation anthrax on side one. High blood pressure is on side one. To resolve this, we have to infer that the dyspnea and diaphoresis that comes from anthrax inhalation is hypertensively(possible pulminary hypertension) induced and the subsequent progressive loss of oxygen is the reason for the hypotension that takes place near death from anthrax inhalation. Here is the update of the side one and side two of health:

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
Low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Zinc
Low Homocysteine
Alcohol
Blood thinning
High HDL cholesterol (good cholesterol)
Low LDL cholesterol (bad cholesterol)
Statins
Sodium
Hydroxychloroquine
Remdesivir
Ivermectin
Elevated liver enzymes
Heparin
Thiamine
Radiation
Inhalation Anthrax-stage 2(gastro symptoms)
Sun

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Ebola-stage 1(flu symptoms)
High mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
Caffeine
Blood clot
Low HDL cholesterol (good cholesterol)
High LDL cholesterol (bad cholesterol)
High Triglycerides
Chemotherapy
Potassium
COVID-19
Arsenic
Inhalation Anthrax-stage 1(flu symptoms)

Another biological agent is the Botulinum toxin that causes botulism. It is obtained from bacteria called Clostridium botulinum. Botulism operates in the body by attacking neurotransmitters, causing symptoms such as nerve damage, paralysis, and eventual respiratory failure and death. Other symptoms are difficulty speaking, seeing, and swallowing along with drooping eyelids. There is also muscle

weakness starting in the trunk and then moving to the limbs before an eventual muscle paralysis and difficulty breathing kicks in. The most common initial symptom is constipation and for foodbourne botulism—dizziness and nausea. These come before the later muscle weakness and neurological problems. Botulism is spread by either aerosol or food. "Botulinum toxin is 15,000 times as toxic as the nerve agent VX, and 100,000 times more toxic than sarin.", according to a study done by Jan Glarum, Don Birou, and Edward CetarukMD entitled Assessment of Likely Mass Casualty Events and Potential Hospital Impact https:// doi.org/10.1016/B978-1-85617-701-6.00002-4. This underscores the magnitude of danger concerning possible weaponization of this toxin. When observing the side one and side two of health to see where botulism fits within that framework, we can refer back to the fundamental operation of this biological agent which is to attack the neurotransmitters. Since there is no noticeable change in vital signs upon contracting botulism, we can deduce botulism to having dopamine theme with a very strong neurological component. Botulism's later symptoms like vision problems, difficulty swallowing, slurred speech and muscle weakness mirror strongly those of dopamine deficiency: diplopia(double vision)/ difficulty eating and swallowing/ difficulty speaking and forming words/ problems holding the body in an upright position/ difficulties with balance when standing and walking/ uncontrollable eye movements. The source for diplopia symptoms in dopamine deficiency came from a study about Parkinson's disease where it's revealed that "Dopamine plays an important role in several processes related to vision, such as adaptation to light, oculomotor control, contrast sensitivity, color vision, visuospatial construction and spatial working memory [4–6]. Lack of dopamine can therefore lead to a range of visual disturbances in PD patients, such as diplopia." Please note that people suffering from Parkinson's disease have low brain dopamine concentrations. The similarities between both the symptoms of dopamine deficiency and botulism allow us to designate botulism to side two of health where low dopamine is already located. We can also add Parkinson's disease there since it corresponds with low dopamine. This allows us to observe botulism as a biological agent, but with a somewhat contrast symptoms typology to ebola or anthrax. Ebola and anthrax begin flu/coronavirus-like before becoming gastro-related. botulism, somewhat conversely, starts (in some cases) with gastro problematic symptoms before being followed by neurological/dopaminergic impairments.

Plague (Yersinia Pestis) was most famously coined "Black death" due to the black scabs that form on the skin during infection. In the 14th century, the disease wiped out a third of the population of Europe. It's primarily contracted by rodents such as rats, mice, squirrels, and rabbits. It's spread to humans via bites from the infected fleas of those rodents, mainly rat fleas. The infection occurs in different forms: bubonic, septicemic and pneumonic. Bubonic plague infection of the lymph nodes result in mostly flu/coronavirus-like symptoms—high fever, chills, muscle aches, headaches, extreme weakness and swollen lymph nodes. Antibiotics in a timely fashion resolves 90% of the cases. However, when left untreated, the Y. pestis bacteria of Bubonic plague eventually enters the blood stream and the infected person then contracts whats called Septicemic plague. The symptoms of septicemic plague are gastro-related and include nausea, vomiting, diarrhea and abdominal pain. The infected person also develops severe bleeding problems, bruises, blood in the urine and from the mouth, nose and rectum. The bleeding problems are followed by severe breathing difficulties and even death. With timely treatment, 75% to 80% of people survive. The connection between bubonic and septicemic plague as the same infection in different stages follows the pattern we see in both ebola and anthrax where a first stage presents flu/coronavirus-like symptoms, and a second stage results in gastro/bleeding symptoms. In ebola and anthrax, the flu/coronavirus-like illness(side two) serves almost like an igniter to induce an avalanche of everything related to gastro/bleeding and side one of our list. The difference between the plague vs ebola and anthrax is that the first and second stages of the plague infection are given different names—Bubonic and Septicemic respectively. This distinction between the stages of the same infection isn't denominated in anthrax and ebola. The symptomatic aspects of plague allow us to allocate Bubonic plague with flu/coronavirus-like illnesses to side two and Septicemic plague to side one with Gastro-intestinal problems, anthrax(stage 2) and ebola (stage 2). Another form of plague is Pnuemonic, which happens when the Y. pestis bacteria affects the lungs. The symptoms are flu/coronavirus-like and is transmitted through breathing in droplets—from infected humans or animals--that contain Y. pestis bacteria. This is the most rare form, but can be easily weaponized as a bioterrorism agent. Pnuemonic plague would go on side two. Here is our updated lists with botulism and plague allocated appropriately:

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
Low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Zinc
Low Homocysteine
Alcohol
Blood thinning
High HDL cholesterol (good cholesterol)
Low LDL cholesterol (bad cholesterol)
Statins
Sodium
Hydroxychloroquine
Remdesivir
Ivermectin
Elevated liver enzymes
Heparin
Thiamine
Radiation
Inhalation Anthrax-stage 2(gastro symptoms)
Sun
Septicemic Plague

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Ebola-stage 1(flu symptoms)
High mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
Caffeine
Blood clot
Low HDL cholesterol (good cholesterol)
High LDL cholesterol (bad cholesterol)
High Triglycerides
Chemotherapy
Potassium
COVID-19
Arsenic
Inhalation Anthrax-stage 1(flu symptoms)
Botulism
Parkinson’s disease
Bubonic Plague
Pnuemonic plague
Clouds

By observing the sun on side one of health, along with radiation and Vitamin D, we can further expound by allocating heat absorption to side one and heat refection to side two. Adding upon that, we can then factor in surface color. Since black surfaces absorb heat, we can add black surfaces to side one; white surfaces to side two. From there

we can fill out the rest of side one and side two of health with all the elements of the periodic table based on their color. Black, blue, dark red, green brown, gray and silver--due to their heat absorption properties as darker colors--can go on side one. White, white-silver, or yellow colors--due to their heat reflection qualities as lighter colors--can go on side two. The sources for the color of the elements are the CRC Handbook of Chemistry and Physics, 88th edition, The Yaws Handbook of Physical Properties for Hydrocarbons and Chemicals, and Chemicool Periodic Table

Please note that " Zinc" has been moved to side two in order to account for " Copper " being placed on side one. Studies have shown that high zinc/low copper levels are associated lower white blood cell counts, leukopenia, neutropenia, and anemia. Low white blood cell count is on side two. Copper and Zinc are antagonistic to each other.

Side one of health
Type 1 interferon response
High white blood cell
High blood insulin
High blood pressure
Cancer
Gastro-intestinal problems
Vitamin E
Sickle Cell Anemia
Ebola-stage 2
Low mean platelet volume(MPV)
Heart Attack
Happiness(high dopamine)
Vitamin D
Calcium
VitaminB12
Low Homocysteine
Alcohol
Blood thinning
High HDL cholesterol
(good cholesterol)
Low LDL cholesterol
(bad cholesterol)
Statins
Sodium
Hydroxychloroquine
Remdesivir
Ivermectin
Elevated liver enzymes
Heparin
Thiamine
Radiation
Inhalation Anthrax-stage 2(gastro symptoms)
Sun
Septicemic Plague
Black surfaces
Heat absorption
Actinium-silvery metal
Americium-silvery metal
Antimony-silvery metal
Gray arsenic-gray metal
Astatine-Presumed very dark

Side two of health
Formation of antibodies
Low White blood cell
Low blood insulin
Low blood pressure
flu/coronavirus symptoms
Vitamin A(beta carotene, sugar)
Malaria
Ebola-stage 1(flu symptoms)
High mean platelet volume(MPV)
Cytomegalovirus
Cardiogenic shock and Cardiac Arrest
Depression(low dopamine)
Magnesium
Vitamin C
Vitamin K
Iron
High Homocysteine
Caffeine
Blood clot
Low HDL cholesterol
(good cholesterol)
High LDL cholesterol
(bad cholesterol)
High Triglycerides
Chemotherapy
Potassium
COVID-19
Arsenic
Inhalation Anthrax-stage 1(flu symptoms)
Botulism
Parkinson’s disease
Bubonic Plague
Pnuemonic plague
Clouds
White surfaces
Heat refection
Aluminum-silvery-white metal
Argon-colorless gas

Side one…continued
Beryllium-steel gray
Boron-black rhombohedral crystals
Bromine-red liquid
Calcium-silvery-gray metal
Carbon/graphite-soft black hexagonal crystals
Fullerene-C70-red-brown solid
Carbon black-fine black powder
Cerium-silvery metal
Chromium-blue-white metal
Cobalt-gray metal
Copper-red metal
Curium-silvery metal
Dysprosium-silvery metal
Erbium-silvery metal
Europium-soft silvery metal
Francium-silver-gray-metallic
Gadolinium-silvery metal
Gallium-silvery liquid or gray orthorhombic crystals
Hafnium-gray metal
Holmium-silvery metal
Iodine-blue-black plates
Lanthanum-silvery metal
Lead-soft silvery-gray metal
Lutetium-silvery metal
Manganese-hard gray metal
Mercury-heavy silvery liquid
Molybdenum-gray-black metal
Neodymium-silvery metal
Neptunium-silvery metal
Niobium-gray metal
Osmium-blue-white metal
Ozone-blue gas
Oxygen-colorless gas
Black phosphorus-black orthorhombic crystals
Red phosphorus-red-violet amorphous powder
Platinum-silvery-gray metal
Polonium-silvery metal

Side two…continued
Yellow Arsenic-soft yellow cubic crystals
Barium-silvery-yellow metal
Berkelium-silvery-white
Bismuth-gray-white soft metal
Californium-silvery-white
Fullerene-C60-yellow needles or plates
Cesium-silvery-white metal
Chlorine-green-yellow gas
Fluorine-pale yellow gas
Germanium-gray white cubic crystals
Gold-soft yellow metal
Helium-colorless gas
Hydrogen-colorless
Krypton-colorless gas
Indium-soft white metal
Iridium-silvery-white metal
Iron-silvery-white or gray metal
Lithium-soft silvery-white metal
Magnesium-silvery-white metal
Neon-colorless gas
Nitrogen-colorless gas
Nickel-white metal
Palladium-silvery-white metal
White phosphorus-White phosphorus is usually pale yellow
Plutonium-silvery-white metal
Potassium-soft silvery-white metal
Radium-white metal
Rhodium-silvery-white metal
Ruthenium-silvery-white metal
Strontium-silvery-white metal
Sulfur(α-orthorhombic)-yellow orthorhombic crystals
Sulfur(β-monoclinic)-yellow monoclinic needles
Tellurium-gray-white rhombohedral crystals
Thallium-soft blue-white metal

Side one...continued
Praseodymium-silvery metal
Promethium-silvery metal
Protactinium-silvery metal
Radon-colorless gas
Rhenium-silvery-gray metal
Rubidium-soft silvery metal
Samarium-silvery metal
Scandium-silvery metal
Gray Selenium-gray metallic crystals
Vitreous Selenium-black amorphous solid
Selenium(A-Monoclinic)-red monoclinic crystals
Silicon-gray crystals or brown amorphous solid
Silver-silvery metal
Sodium-soft silvery metal
Tantalum-gray metal
Technetium-silver-gray
Terbium-silvery metal
Thulium-silvery metal
Titanium-gray metal
Ytterbium-silvery metal
Yttrium-silvery metal

Side two...continued
Thorium-soft gray-white metal
Tin-silvery-white
Tungsten-gray-white metal
Uranium-silvery-white orthorhombic crystals
Vanadium-gray-white metal
Radon-colorless gas
Zirconium-gray-white metal
Zinc-blue-white metal

In the Clinical Case Reports Journal Volume 8, Issue 9 September 2020 https://doi.org/10.1002/ccr3.2987 Pages 1666-1671, a research paper published in May 2020 entitled Zinc-induced copper deficiency, sideroblastic anemia, and neutropenia: A perplexing facet of zinc excess by researchers Ahsan Wahab, Kamran Mushtaq, Samuel G. Borak, and Naresh Bellam gave an analysis of a case study involving someone suffering from zinc toxicity/copper deficiency. It was the noted that the patient's initial lower white blood cell count was resolved after supplementing with copper. Her white blood cell count rose to normal levels after being given 2 mg daily oral elemental copper(to counteract the elevated zinc) for 2 months.

Any role Zinc has in fighting flu-like illness will now have to be associated not with zinc itself(since it's now moved to side two from

side one) but on the copper homeostasis that occurs when a balance of zinc/copper is present in the body.

Other studies that link Zinc deficiency to certain cancers help to affirm this alteration of zinc's placement over to side two as a fighter against cancer.

You will notice from this newly formulated side one/ side two layout (with all the elements allocated) that oxygen was placed on side one. This was done because of the correlation between low blood pressure(side two) and low oxygen. Consequently, this allowed me to posit that all the asphyxiation gases like argon, helium, nitrogen, etc. should go on side two since their primary component is to displace oxygen. Another key point to observe in order to avoid confusion is the way that many of the radiation elements are placed opposite of radiation itself. The best way to understand this qualification is by understanding how water--when heated--will give off a heat that would affect a person differently than the actual water would should that water be left unheated and also consumed. Also the concept of radioactive decay fits with the thesis of opposing sides of health.

Radioactive decay occurs when an atomic nucleus is bombarded with neutrons, thus creating an imbalance between the protons and neutrons within the nucleus. The neutrons then cause the atoms to split into 2 smaller atoms. The 2 smaller atoms subsequently release more neutrons. Those neutrons hit the 2 smaller atoms, which then causes each of those 2 atoms to split into 2 smaller atoms, which then leaves 4 smaller atoms altogether. Those 4 smaller atoms then subsequently release neutrons which hits each of those 4 smaller atoms causing all of those atoms to each split into two. This chain reaction simply continues and is what is called the fission process. This fission process of radioactive decay in which the atoms split into smaller atoms can be best understood by observing the atoms as the elements on the periodic table, where an element with a higher atomic number splits into 2 elements with lower atomic numbers. For example when Uranium 235 is bombarded by neutrons, it absorbs the neutrons and becomes Uranium-236 before it splits into one Krypton atom and one Barium atom, both of which have lower atomic numbers than Uranium. This nuclear process can be understood, according to this thesis, as side one(where heat and radiation are located) taking over side two(where many of the radioactive elements are located).....all by way of neutron bombardment of an atomic nucleus and the subsequent radioactive decay during the fission

process. This allows us to allocate neutrons to side one and protons to side two. We can also began to hypothesize what proton capture would effectuate in terms of a large scale reaction of side two taking over side one--something that would likely produce extreme cold and thus freeze everything in its path. It would be a cryogenic reaction.

When it comes to hypothesizing the opposite process to fission(radioactive decay generating tremendous heat energy), one can refer back to the fundamentals of plutonium production. During WWII, in the B reactor at the plutonium production site in Hanford, Washington, scientists bombarded Uranium with neutrons for several weeks before placing the extremely hot Uranium and its fuel elements in a pool of water behind B Reactor's core for cooling. During that time, Uranium decayed into plutonium and the radiation from the rest of the fission products subsided. The fission products are the increasingly smaller unstable elements that come about when the atoms split into smaller atoms during the fission process of Uranium being bombarded by neutrons. When the Uranium was stored in water, the Uranium 238(an isotope of Uranium) absorbed a neutron and became uranium-239. It then converted that neutron into a proton. Since the Atomic number of an element is its number of protons, the process of an atom converting a neutron into a proton validates identifying the atom as a new element. Since Uranium was the heaviest element at that time with the highest atomic number, a new element arising from a Uranium atom converting a neutron into a proton would be added to the periodic table. In this case, the new element was named Neptunium. Therefore Uranium- 239 became Neptunium-239. Within 2.5 days, Neptunium-239 converted a neutron into a proton, which validated the identification of a new element called Plutonium or Plutonium 239 in this case. This process that took place while the Uranium fuel elements were being cooled allows us to hypothesize that unlike the heat generating radioactive decay that takes place in fission, a cold generating process would involve a chain reaction in which atoms are constantly converting a neutron into a proton and thus creating new elements in the process--elements that could only be identified and named from the final element that would come about at the end of that process. In order to track those new elements in this case of extreme cooling, one would have to place-after the extreme cooling process--those elements in a water storage that would bring those extremely low temperatures to normal temperatures. During a process such as that, radioactive decay would take place, leaving the water full of unknown elements that would

have to be identified and named using solvent extraction techniques and spectroscopy.

A hypothesis on how a self sustaining chain reaction would continuously create new elements and emit a tremendous amount of cooling could be surmised through understanding the beta radiation process: Uranium-238 absorbs a neutron during fission and becomes Uranium-239, which then--after 23 minutes(in water storage)--beta decays and converts a neutron to a proton and becomes Neptunium239, which itself after 2.5 days(in water storage) does the same and becomes Plutonium-239. Plutonium-239 has a half-life of about 24,100 years before it would become Americium-239. However, upon absorption of 4 neutrons, plutonium-239 becomes plutonium 243, which has a half-life of 5 hours. If the uranium-239 was bombarded with neutrons during the water storage phase, the isotopes would continuously beta decay into new elemental isotopes with short half lives, thus more quickly emitting a tremendous amount of cooling. (The hypothesis is that the formation of new elements brings about cooling) Using Oxygen-15 labelled water, which is regular water, but with the oxygen atom replaced by oxygen-15 could possibly accelerate an isotope's half-life. The oxygen-15--as a a positron-emitting isotope--would create an environment that would help speed up the process by which each new isotope eventually releases an electron and converts the neutron into a proton. The idea behind this is that the presence of positrons(subatomic particles with positive charge) will exert an attractive pressure on the electrons of the atom, thus speeding up the process of its elimination from the atom, which would reduce the atom's half-life and conversion time into becoming a new atom. Hypothetically harnessing this into a cryogenic explosion that could offset the massive radiation release of a nuclear bomb would require containing uranium-239 within an apparatus of deuteron bombardment of a nitrogen gas which creates oxygen-15. This would create the extreme cooling chain reaction with uranium239 becoming Neptunium, Neptunium becoming Plutonium, Plutonium becoming Americium...etc etc....presuming the Oxygen-15 solution would rapidly accelerate each element's half-life. Such an outcome would be making use of the philosophy of side one and side two of health being opposed to one another, but on a large scale. A nuclear explosion is posited as the side one reaction while a cryogenic explosion is posited as the side two reaction to offset it

Another possibility for nuclear defense is the isolation and use of Xenon-135-- a product of the Uranium-235 fission process that takes

place in nuclear reactors. As a neutron absorber that often cools down nuclear reactors by absorbing the extra neutrons, Xenon-135's use in laser defense technology could poison the nuclear reaction of any atomic missiles that it comes in contact with. Through diffusion, the Xenon-135 gas could penetrate the missile. Theoretically at a high enough temperature and pressure, a Xenon-135 powered laser beam in contact with the target would(at the very least--keeping in mind that high powered laser beams destroy missiles) diffuse into the external components of the target and infect the fission elements within and thus reduce the chances of a proper nuclear fission reaction taking place when the missile eventually detonates.

Chapter 3: Subterranean Warfare

In building upon this thesis concerning the 2 sides of health, I offer an explanation that would further expound on how there must be an opposing or offsetting effect to everything. We will look at the opposing effect between air power and subterranean power. Throughout the history of warfare, subterranean structures have been used against enemy forces with great success. Back during the Arab invasions in the 7th century, monks found that they could successfully evade Arab forces by hiding underground. Back in WWII, the Japanese were effective in building underground fortification against US air power, and so were the Chinese, who built underground fortifications against the Japanese air power. . The Vietnamese during the Vietnam war was possibly the best example of how effective underground fortifications are against a superior air force. Many of the larger military powers, have had no formidable answer for this type of defense, even against small pockets of militants. The current conflict in the middle east(2002-2021 as of now) is marred by the continued survival of these insurgent militant groups. Major powers like Russia and the United States have carried out a number of aerial attacks against them in recent years, but only with enough success to weaken the threat, not totally eliminate it. Israel has faced numerous problems with the underground operations of Hamas, the militant group that controls the Gaza strip. Not only for smuggling resources into Gaza, the tunnels used by Hamas has allowed them to, at one point, ambush and kidnap Israeli soldiers in Israeli territory. Hamas is also able to conceal ballistic fire locations with the use of the tunnels, making it more difficult for Israel to locate and destroy them. This underground methodology is also how ISIS continues to launch ambush attacks against Syrian regime soldiers, even after years of being bombarded by both US and Russian airstrikes. The operations of Hamas and ISIS and their continued survival in small numbers is setting the stage for a new type of warfare: Subterranean warfare. It's obvious that the larger powers have no real answer on how to battle effectively against underground forces, other then planting explosives at the entry or exit points. This, however, is largely ineffective since many underground structures have detours that lead to multiple entry and exit points, making the destruction of them much more complicated. It also doesn't help that the sections that have been demolished by explosives are easily repairable. Another issue surrounding the search and destroy aspect of combating this underground system is

that soldiers are often unable to determine whether or not the tunnels are booby trapped.

This type of warfare has been effective for centuries; what ISIS and Hamas is doing is bringing notice to it. In fact, most nations in the middle east and around the world for that matter already have these underground structures in place and will only be emboldened against stronger nations the longer a small number of militants—relatively speaking--are able to survive by simply building underground fortifications. Israel and the US are working on technology that will allow them to detect underground tunnels, and if they are successful, we may see an end to the prolonged conflict in the Middle East. If not, then we can expect that everyone there will pursue self determination without regard for another country's superior air power. The technology used to detect underground tunnels involve the use of seismic or gravity detectors. Seismic detectors are able to measure the vibrations as they pass objects beneath the surface of the earth, and if able to find a common anomaly that would identify the existence of a tunnel, those detectors could be effective. However, there would still need to be intelligence that pinpoints the general area where a tunnel may exist. Gravity detectors like gravimeters are able to detect changes in the Earth's gravitational force based on the density beneath the surface. The presence of a void underground would reduce the gravitation force and would thus show up accordingly on the gravimeter. Another method is measuring the voltage of an electrical current, which would move at a lower voltage inside a void. Ground Penetrating radar(GPR) is another device used to detect tunnels. GPR uses pulses of radio frequency energy to see underground. The distances detected underground however is limited, since it maxes around 50 ft. Tunnels have been dug by drug smugglers and militants as far as 100 ft beneath the surface. The use of bunker busters(aerial bombers employed by the US against ISIS) which can penetrate hundreds of feet of both earth and concrete, is still challenged by the possible extensiveness of the tunnels. Some tunnels have multiple detours that allow for escape and reconstruction of damaged sections. Drug smugglers now present a much higher risk in terms national security, since a tunnel system is both a defensive and offensive weapon , irrespective of its use in drug smuggling activities. The arrest of two Houthi militants at the US/Mexican border in 2021 raises the question of vulnerability, since one can posit that infiltration of Latin America by radical militants puts the US at risk of not only the implication of undetected drugs coming into the country, but also the implication surrounding the

likelihood of a militant attack or ambush initiated from an underground tunnel originating from Mexico.

The tunnel entries built by Hamas and ISIS are about 1 meter wide and go as deep as 100ft beneath the surface. Pneumatic jackhammers are often used to dig out the tunnels and workers cover about 2-3 meters a day using them. Militants usually employ skilled workers to do the job. These workers normally have some knowledge of the engineering and geological aspects that go into constructing a tunnel. The tunnels are often dug from the inside of a shelter of home, which provides operatives more stealth. ISIS militants who have escaped enemy fire, often seek refuge in nearby villages and pay residents there to help them construct a tunnel.

There are some hazards associated with the initial constructing process , such as cave ins. It's common for workers to perish during the making of a tunnel. Cave ins usually result from not waiting long enough--after a torrential rainstorm--to resume tunnel construction. As a result, soil erosion, which often compromises the landscape, puts workers underground at risk of being trapped as a result of collapse. Casualties have ironically allowed Hamas to improvise on the underground construction process and gain a greater understanding of it altogether. Hamas has in turn managed to equip their tunnel system with electricity, concrete walls and ceiling, and is able to conduct communications. Hamas has been able to smuggle concrete into Gaza and has used it to fortify their tunnel system. ISIS, on the other hand, has a less featured system, but has learned over the years how to survive direct air assaults by hiding underground. Its likely that ISIS will build their tunnels based on the proximity of Gas field locations. Many of the recent ambush attacks by ISIS against Syria have occurred near Oil and Gas fields. Oil and Gas are both important elements of warfare, as they allow militants to maintain electrical, logistical, and communication channels.

Looking at what we've gathered so far in terms of side one and side two of health, we can begin the process of placing gravity itself. With elements like the Sun, and oxygen on side one, and carbon dioxde on side two, we can safely place gravity on side two. Anti-gravity, likewise, would go on side one. We can also add air power, thrust, propulsion to side 1 since those are anti-gravity concepts. This sinking aspect of gravity as it relates to an abject toward the earth affirms its placement with carbon dioxide on side two since there is more

carbon dioxide underground than above ground,. There is also less oxygen underground.

So if we look at the opposing aspect relating to aboveground and underground, we see that the deeper one goes under the surface, the more ineffective all above surface components become as it relates to any influence it could have on subterranean components. This aspect applies both ways. To apply analogously the idea that a component from side one or side two can eventually overcome and overpower the components of its opposite side, we must presume that more of one or the other would propose a threat to its opposite. More penetration into the earth does not necessarily threaten the components or situation above ground, or vice versa, a higher elevation above the surface doesn't necessarily threaten the underground components.

The biggest threat to any underground structure is heavy rain. In most tunnel collapses, heavy rain is often the main cause. Geologically speaking, rain effects are often deterred by things such as concrete or mulch which shields the soil from the effects of heavy rain or wind. In tunnel collapses, after the rain water hits the soil, it eventually infiltrates its way to the tunnel's surrounding rock, weakening it though erosion. Water gets into cracks and joints, eventually causing the rocks to break open and split apart. At the moment one can presume that precipitation is perhaps the greatest threat to underground tunnels. This in itself is a form of intelligence since it's likely that, because of this, militants will not shelter or construct underground during days of heavy rain. They may also, as a way to improvise, start constructing tunnel paths directly underneath surface paths formed with concrete, such as city streets. This would lessen the effect of heavy rain on tunnel stability. However, the lack of arable land and prevalence of prolonged droughts in the middle east still allows for uninterrupted construction of sustainable tunnels there. This allows us to comprehend the notion that underground structures would be more operational or populated during seasons of drought as opposed to seasons of precipitation. It's likely that militants in the middle east have already planned in advance for climate factors.

The approach to this field of conflict should be applied with some discrimination since factors like 'what the tunnels are being used for' need to be taken into consideration. Smuggling purposes would not warrant a counter-terrorism search and destroy operation since

civilians are often employed and in many cases forced into transporting cargo to and from. If the tunnels are used for both, then its all the more difficult to discriminate accordingly. Ideas have been presented which propose that soldiers infiltrate on foot into the actual tunnels and conduct operations from there. The challenges to this idea is that signals are often weaker or disabled below the surface, making it difficult to maintain good communications. Another issue is the question of soldiers having the necessary oxygen to carry out prolonged subterranean missions. Beneath the surface, oxygen levels are usually lower, which puts soldiers at risk and endangers the mission. There is also the potential of carbon monoxide poisoning should soldiers be exposed to heavy smoke. Gas mask and other oxygen-storing equipment would be ineffective in protecting personnel against a carbon monoxide build-up within such an enclosed space. Ideally being able to detect and display tunnels on above surface radar makes for a more astute counter tunnel strategy since personnel would be less required to enter the underground fortification. They can simply wait for operatives to exit the underground structure before confronting the situation. This makes it easier to discriminate exactly who goes into and out of the tunnels.

While Jihadist cross-border tunneling is an issue for Israel's national security, it still ranks below the barrage of rocket fire that Israel faces from militants in Gaza. While the Iron Dome is increasingly effective in countering enemy rockets, Israel is still faced with the possibility of civilian casualties and also the geopolitical implications of defense. The Iron Dome presents a conundrum from a geopolitical perspective. Hamas knows that firing rockets at civilians, with those rockets being intercepted by the Iron Dome defense, allows for more justification later on should Israel retaliate and inadvertently kill Palestinian civilians in the process. The success of the Iron Dome often causes the international community to ignore the fact that militants in Gaza are firing those eventually intercepted rockets at civilians. In this case, Israel should get credit for not allowing enemy rockets to kill Israeli civilians, thus negating a prospect that would conveniently allow for Israel to garner more international support in defense against militants in Gaza. The militants in Gaza are wise in recognizing the need for international sympathy and their calculated strategy has brought forth the necessary aid needed to build up their reserves, and the international support needed to justify their rocket attacks on Israeli civilians. The geopolitical aspects are heading in the direction of Israel having to call off any excursions in Gaza territory, while at the same having the burden of defending themselves against

rocket attacks, with those terrorist attacks having no implication on the international outlook of militant aggression against Israel. Under this paradigm, actual terrorism is when the terrorists are successful. When they are thwarted, the attempted terrorism has no bearing on the perpetrator. This factor puts more pressure on the application of precision and the technology needed to apply it, since Israel will not seek justification by allowing Israelis to be killed by rocket fire. Allowing attacks against one's own territory and civilians was a tactic commonly used by armed forces throughout history.

The ability to map out on radar the location of all underground structures within a given area is the ideal scenario regarding new technologies. This would allow for personnel to optimally discriminate who goes into and out of the structures. It would also allow them to plan in advance an effective approach in neutralizing any dangers surrounding the operational intent within the tunnels. This neutralizing aspect may serve as a more ideal approach since the existence of the tunnels may be an asset in the future and simply keeping the tunnels under observation, as opposed to destroying them, can provide an added defense measure in an unfavorable event. The tunnels can also be re-fortified and sustained for later use or as a geological study, saving both time and money.

The above surface structures provide some protection to underground tunnels. Concrete and Asphault reduce the effects of heavy rain on the soil and averts the possibility of rock erosion beneath the surface, which is normally a factor that causes many underground structures to collapse. This makes concrete the number one area of interest in locating the existence of an underground tunnel. If the workers are apprehending the effects of precipitation, then it's likely that they have improvised by routing tunnels to follow an alignment to the above surface concrete. If that is not the case, then they would have improvised to only construct or inhabit tunnels during dry seasons, and reduce operations there during wet seasons. Gaza militants fortify their tunnels with concrete surroundings, however due to creep (which happens to concrete under sustained load), concrete can easily collapse underground. Heavy soil and rain infiltration into underground rocks cause rocks to break, losing their ability to support the surrounding soil. The wet heavier soil then places more pressure on the underground tunnels, eventually causing them to collapse.

Compared to other places, the Middle East presents less risk of tunnel collapse, due to the prevalence of droughts. Underground tunneling would be much more hazardous in tropical climates where it rains regularly, making the construction of underground tunnels aligned to the above ground concrete much more imperative. A good contingency for urban areas would be the use of rods that penetrate deep into the ground at different intervals in a city through concrete or asphalt surfaces, allowing for possible detection should diggers take into consideration the location of concrete surfaces as they construct a tunnel. Paved roadways in urban areas provide a security aspect for tunnelers and a security risk for cities, should militants apply this type of warfare.

In referencing the side 1 and 2 of health as it relates to air power and tunnel fortitications, we can ruminate on the propulsion and thrust anti-gravity aspects of side 1 as direct antagonists to pro-gravity underground construction on side 2. In propulsion and thrust, pressure is applied to the surface before it breaks the gravity force. This pressure can be applied to side 2 since it goes with the gravitational force. The after-effects of it should define thrust and propulsion on side 1 since gravity is antagonized upon lift. We see in tunnel collapses how pressure from heavy wet soil and surrounding rock degradation has a primary effect. It's analogous to how symptoms arising from side 2 components are made worse by addition of another component of side 2, or vice versa, symptoms associated with side 1 made worse by addition of other components on side 1. We see in this case, that destruction against the underground component means the application a similar component setting off a toxic effect. However, the void in a tunnel can be applied to side one since is does contain air, and the gravitational pressure surrounding it--as a component of side 2--can serve as the direct antagonist. If we line up our list it should look like this.

Side 1 of health	Side 2 of health
Air power	Underground structure
Upward effect of Propulsion	Downward Pressure of propulsion
Thrust	Downward pressure of thrust
Anti-gravity	Gravity
flying	digging
void in a tunnel	surrounding soil

One can gather that digging out a tunnel beneath the earth's surface is actually the application of a side 1 component against side 2, since the void created brings in oxygen from above the surface. The tunnel construction itself becomes the result of an action against gravitational forces, especially when excavated horizontally. This would call for certain parts of the excavation process to be on side 1. The greater the void, the more it contributes to the side 1 component of above surface oxygen . Correspondingly, the gravitational effect from hollow ground is much less than that from very dense ground. The density of the Earth antagonizes anti-gravity intentions. The location of someone in a void underground is in a position of antagonism to gravity itself, which is why when soil becomes more dense, the load on the underground tunnel increases, putting it at risk. With this, we can place the void within a tunnel on side 1 and the surrounding soil on side 2. The antagonism to air power is not the tunnel, but is the underground soil surrounding the tunnel. We can thus presume that aerial object would have to contend with a greater degree of gravitational pull when positioned above a more dense part of the earth. There are many myths and legends that speak of aircraft disappearing when navigating through certain locations on earth. Even in this regard, one can hypothesize that the aircraft may have encountered some extremely dense terrain or in another aspect extremely hollow ground that could have propelled the aircraft into outer space. Of course , that example is just conjecture on an extreme scenario.

The implication of search and destroy, without due discrimination, could undermine any incurred security benefit. The proposal of search, entry, and neutralization becomes a very plausible approach when taking geopolitical issues into account. The importance of discrimination in this type of warfare cannot be understated. In fact, the often indiscriminate use of drones by the US in places like Africa and the Middle East has given rise to militant aggression and fostered an international urgency for fair tactics and greater precision. Since most tunnel construction is initiated from the inside of a building as a way to avoid detection, the security apparatus in place can start making efforts to install seismic senors, which senses the ground vibration of the earth. These can be installed at various locations no different than the way traffic lights are set up in urban areas. This works at both the foreign and domestic level. The vibration effect of drilling can be detected by a nearby sensor, alerting authorities of possible tunnel construction in the area. This approach attempts to locate the initial tunnel construction process, which may be more

feasible than trying to locate tunnels already built. Since jackhammers are normally used to construct them, detecting the subsequent ground vibrations while honing in on the actual drilling site is easily achieved with today's technology. Without this aspect accommodated into such a program, a huge void would linger should technology attempt to risk time and money in innovations that may take a while to develop. The added time there would provide opportunity for construction of more underground fortifications, an unfavorable prospect from a national security perspective. Focusing frst on detecting ground vibrations from the initial drilling process can prevent the proliferation of underground networks. There is a containment aspect to this strategy that should be considered, even if militants could simply work around it by constructing tunnels from within a tunnel. This argument is supported by the fact that the existence of tunnels in the present tense has not yet reach a tipping point. The security apparatus has enough time to begin the process of prevention, as opposed to elimination of existing tunnel structures. The idea is that employing the use of seismic sensors at various locations to detect ground vibrations from drilling holes is much easier than trying to develop technology that would detect and locate already-operational tunnels. While sound barriers could theoretically reduce the noise effect of drilling, it cannot deter the vibration aspect that would arise from it. One has to presume that the ground vibration signal detected from the use of jackhammers can be displayed on a device situated within a certain proximity. Installing this type of technology requires thinking ahead along with application before the fact.

A technology that could possibly help detect operational tunnels would be acoustic sensors, assuming the tunnel is fully operational with no more drilling applied to its development. Footsteps would be the only noise that could give away its location. However, in order for this to be developed, one would have to undertake their own tunnel construction and develop algorithms that account for footstep noises at various depths beneath the surface along with its position in relation to the sensor. The project would involve the construction of multiple tunnels at various depths with the sensors placed at various depths and distances from the footsteps. Each sensor would detect the footstep noise at each depth and distance. Algorithms can then be developed that would identify the footstep noise and account accordingly for the distance/position from the sensor. This would help in the noise discrimination aspect of accurate detection and allow one to locate the exact position of the tunnel. A distance metric

should be formulated for real-time application. If multiple sensors are alerted, then the algorithm or distance metric should allow one to be able to trace the path of the tunnel.

While there are challenges in the use of acoustic sensors to apprehend footstep noise among other noises within a certain environment, the use of acoustic sensors underground would make for an easier discrimination process, presuming that there is less background noise underground. It's possible that this technology can be used in conjunction with seismic sensors.

Personnel breach of a tunnel structure poses significant health hazards. One is the possibility of tunnel collapse under sustained load. Mitigating the chances of being in the tunnel during a collapse would come with keeping a close eye on climate factors like precipitation, which is a primary cause of tunnel collapses. Making it a point to avoid tunnel excursion during times of heavy rainfall increases the likelihood of survival and reduces the risk of collapse while being present in the tunnel. Another issue is the possibility of carbon monoxide poisoning should a fire break out in the tunnel. The protective masks don;'t protect against smoke. Ethanol Vapor Inhalation could provide some protection against carbon monoxide exposure. In a study involving rats, ethanol intoxication was found to have a protective effect against carbon monoxide poisoning. This idea can be applied underground if the ethanol, which is a flammable agent, is sealed safely away from any contact with fire. Flammable materials are recommended to be stored in areas where there is strong ventilation. Underground structures, however, usually lack in this regard. The only workaround is for operatives to enter underground tunnels with alcohol in their system. The drawback of this is that the alcohol would contribute to reductions in judgment and reaction time in the event of a serious emergency. This is not the ideal state for anyone to be in during a risky mission, but it's the only way to safely make use of alcohol's protective effect against carbon monoxide poising in a poorly ventilated enclosed space. This also offers the idea that a trade off may be necessary—giving up some reaction time and judgment in exchange for extended time in the tunnels. Certainly during the breaching process, ethanol vapors could be applied to breathing apparatuses. The importance of a workaround is mediated by the fact that personnel would be able to stay underground much longer. If we revert back to the side 1 and 2 of health, we already see that oxygen and alcohol are placed on the same side, affirming alcohol as a proponent of oxygen and an

antagonist against anti-oxygen elements. So it makes sense as to why ethanol, which is the main ingredient in alcohol, would provide protection against carbon monoxide poisoning. Correspondingly, there could other factors on side 1 that may protect a person in low oxygen environments.

Another challenge facing the underground operations is the adequacy of communications equipment. Signals are often lost at very deep locations beneath the surface of the earth. Thick layers of earth embedded between the tunnel and the surface is the major factor in signal blockage. Radio signals have a hard time penetrating those thick layers, which obstruct the necessary communications. In urban environments, radio signals encounter similar obstruction in areas where the receiver is positioned behind or above thick or multiple layers of concrete. In skyscrapers, radio repeaters have to be installed in order for communications to reach personnel located on higher platforms. Signal strengthening is a key element in tunnel communications, however personnel could encounter underground structures where these signal strengtheners won't be available.

Sound travels through the air, water, and many solid structures. When a person speaks into a walkie-talke, that sound is converted into radio waves or signal and transmitted with the antenna. A walkie-talkie using the same channel can receive that transmission with their antenna and decode the sound from the signal. In underground situations, the signal transmitted is often blocked by the thick barrier of earth between the tunnel and surface. A creative workaround would be finding a way for the sound to be converted into bass or vibration before it's converted into a radio signal and transmitted via antenna. The hypothesis here is that the signal's penetration power is directly related to the sound's penetration power. An example would be how the bass of music or voice can still be heard behind a thick barrier, even when the sound of the voice or music can no longer be heard. There would have to be a correlation where as the transmitted converted sound portion of the signal could not be detected by the receiver, the converted bass portion could. Just as there is a point where sound cannot be heard beyond a certain amount of thickness of a barrier, correspondingly there must be a point where the radio signal cannot be received beyond a certain amount of thickness of a barrier. When bass is applied to the sound, the sound itself is decipherable beyond the sound blocking barrier through the vibration caused by the bass. One can presume that this bass vibration converted to radio signal would allow a for a

transmission that would allow the receiver to pick up the signal of the bass vibration beyond the limit of the signal of a regular voice sound, just as the bass itself allowed for the sound to be deciphered beyond the limit of where the sound could penetrate.

A number of people have reported positive results using flat antennas in their basement, an area in buildings where reception is a problem for a number of devices. Based on this information, one can presume that mounting increasingly thin antennas on communication devices could have a positive effect on signal detection from underground tunnels.
Mounting antennas on a PVC pipe is a typical method used to boost signal reception. Incorporating these factors into tunnel communication devices could provide some progress toward eventual breakthroughs.

In the present day, the Middle East is perhaps the greatest example of how effective tunnels are against urban defenses. Beginning in late 2013, ISIS was able to lay siege and occupy large swaths of territory in Iraq and Syria before eventual US intervention in Iraq in 2014 and Russian intervention in Syria in 2015. Even after numerous Aerial bombardments by US and Russian Air Forces in Iraq and Syria respectively, ISIS has still managed to survive with the use of tunnels, even launching successful ambushes against Syrian regime forces, amidst their dwindling numbers, thus prolonging the conflict and effectuating an urgency for greater battlefield discipline. Many of the armed forces around the world have recognized the threat and began making concessions to deal with the problem. Israel faces the greatest challenge of dealing with the threat of underground operations by enemy forces. Hezbollah and Hamas have both made use of tunnel warfare and at numerous junctures, successfully infiltrated Israeli territory. Israel has bolstered their defense in response and used technology over the years to locate a number of cross border tunnels. The dangers of kidnappings, planting explosives, hostage taking, and all-out sieges are posed by effective use of underground tunnels. In the West, many underground structures have been built, but mostly for drug smuggling and immigration purposes. There is at least one instance of a tunnel being built for a bank robbery, which ended up failing due to collapse as a result of heavy rainfall. Portions of the tunnel likely aligned with surface terrain comprised of dirt. When it rained the water penetrated the soil and eroded the surrounding rock of the tunnel, causing it to collapse. It's likely in the future that attack tunnels will

be built to align with surface concrete areas to reduce the risk of collapse from heavy rainfall.

The issue of heavy rainfall brings to light the importance of knowing the surface terrain above the tunnel structure. Surface terrain covered in concrete or mulch is at less risk of compromising underground tunnel stability than surface terrain made up of soil or regular dirt. The concrete and mulch limits the level of water that can penetrate the soil and the tunnel's surrounding rock. When overexposed to water, rocks can break and cause tunnel collapse.

We can only assume that many attack tunnels will not be stabilized with rock bolts, which lessens the risk of tunnel collapses. Rock bolts are simply long anchor bolts that are drilled into the ceiling of a tunnel in order to bolster stability and prevent collapse from sustained load.

Technology that would allow underground personnel to detect the type of surface terrain aligned directly above their tunnel position could help with safety protocols regarding unstable areas of the tunnel structure. We posit that tunnel areas aligned with soil or dirt terrain would be areas where there is a high risk of collapse. Tunnel areas aligned with surface terrain covered in concrete or asphalt would be at less risk of collapse.

Focus areas should be narrowed down to regions where rainfall is minimal, since less rainfall correlates with less risk of tunnel collapse. Lack of knowledge on this factor could imperil those embarking on tunnel projects in more tropical areas if they haven't improvised and taken into account the importance of tunnel alignment with concrete covered surface terrain in tunnel stability. Yet, it's important to note that concrete does erode, but extremely slowly. It can take hundreds or thousands of years of being exposed to rainfall for it to began showing signs of wear. This may be a reason why Hamas uses cement for their underground tunnels. However, there is still a chance of collapse if the surrounding rock erosion outside of the underground concrete tunnel increases the overall load on the concrete itself. The increased sustained load increases the amount of creep and compromises the overall stability of the tunnel.

Those seeking to imitate the Middle East or the Mexican border in terms of constructing underground structures must take into account that the lack of rainfall in those areas is a major asset for tunnel

construction. Embarking on such an endeavor in tropical areas will require more risk, time, equipment, knowledge, and patience.

The most optimal idea concerning the tracking of tunnels would be if they can be discerned from satellite imagery or above surface radar. It was mentioned before that the greatest natural enemy against underground tunnels is heavy rain. Upon research, it occurs that the greatest natural exposer of underground tunnels are sinkholes. If there is a way for surveillance to spot the presence of sinkhole on its display apparatus, it could lead to intelligence regarding the position of a tunnel. Sinkholes have exposed the location of numerous underground excavations. The technology used by NASA to forsee sinkholes in advance could correlate into technology used to locate tunnels from radar systems. In 2014, NASA used technology that bounced signals off the ground and measured the differences in the phase of the waves returning to the satellite. Ground layer surface deformity moved horizontally toward where the sinkhole eventually formed. As a result, horizontal surface deformations become a key indicator of sinkhole formation, allowing the possibility for tunnels to be detected remotely.

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Index